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ABSTRACT

A study examined the social processes and internal factors that foster women's participation in technical vocational training at the high school and community college level. Data were collected from traditional and nontraditional female students in California secondary and postsecondary vocational training programs by self-administered questionnaires with items reflecting five primary clusters of variables: (1) demographics/family background, (2) support/encouragement from important others to enroll in nontraditional programs, (3) peer experience with nontraditional programs, (4) personality dimensions and sex-role orientations, and (5) perceived barriers to enrolling in a nontraditional program. Nontraditional students were found more often to have working mothers, to have been employed more hours per week, and to be of a higher social class. They consistently received the most support and encouragement to enter nontraditional fields, most often by parents and already-enrolled female students. Nontraditionals had more female friends and siblings who had experience with nontraditional programs. Significantly more traditionals than nontraditionals believed there were rules or restrictions limiting enrollment to men. Traditionals had a significantly greater fear of success and were more sex-typed. (YLB)

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Final Report: Contract NIE 400-79-0041

Social Process and Internal Factors Affecting Female Enrollment in Technical Vocational Programs

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NATIONAL INSTITUTE OF EDUCATION

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Betsy Bosak Houser

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I. Introduction

In the past four decades, women have greatly increased their participation in the paid labor force. Since 1940, the number of working women has almost tripled, accounting for 40.6 million or nearly 50 percent of all adult women in 1979. Most women who work do so for economic reasons. Of women in the labor force in July, 1979, 44 percent were single, divorced, widowed, or married with husband absent (Monthly Labor Review, 1979). Yet, despite this demonstrated need for earned income, women remain concentrated in a few low-paying occupations. The net impact of this high concentration of women in jobs that paid poorly is a substantial income difference between employed men and women. The data indicate women continue to earn 59¢ for every dollar earned by a man, a figure which has not increased in the last decade.

A review of vocational education enrollment patterns by sex reveals that women now training for jobs are continuing to follow the traditional pattern of taking programs that either do not prepare them for employment at all, or which prepare them only for work in traditional low-paying "female" jobs. For example, in California in 1979, 81 percent of the students enrolled in homemaking and consumer education courses were women and 70 percent of those enrolled in office occupations were women. In contrast, only 19 percent of the students enrolled in Trade and Industrial programs were women. And, the majority of these women were studying female-traditional programs like Cosmetology rather than male-traditional programs such as electronics or metals - - which lead, by and large, to higher paying occupations (Houser et al, 1979).

This pattern of sex segregation in vocational education and its adverse impact on the career opportunities of both men and women, was brought to the attention of Congress during the development of the Education Amendments of 1976:

> "The Committee...came to the conclusion that the inferior position which women now hold in the labor market is being reinforced by many of the current practices in vocational education."(P.L.#94-482, Title II, Part A, Sec. 101)

As a result, federal legislation was passed mandating each state to:

> "develop and carry out such programs of vocational education...so as to overcome sex

discriminating and sex stereotyping in vocational education programs, including programs of homemaking, and thereby furnish equal education opportunities in vocational education."

This research was designed to improve educational quality and foster equality of educational opportunity through the identification of the social processes and internal factors which foster women's participation in technical vocational training at the high school and community college level. Through the identification of the factors which promote women's involvement in the blue-collar, pink-collar, and skilled trade occupations, it is hoped that policy makers will focus their attention on the factors in the environment that are subject to influence and change. Future efforts can thereby be directed toward those factors which foster or inhibit women's participation in high-paying technical occupations, with the overall goal of improving both educational and occupational equality for women.

II. Review of the Literature

An examination of the numerous influences upon an individual's career choice indicates that men's and women's choices are affected by both external influences - - such as parents, peers, school personnel - - and internal factors - - such as personal characteristics, sex-role attitudes, self-concept, and achievement motivation. The research clearly indicates that the career choice process begins at an early age. By age five, children have formed attitudes and an awareness of the world of work and have opinions about the appropriateness of certain careers for members of each sex. A number of studies indicate that children and adolescents acquire sexual stereotypes, seeing some occupations as "for men" and others "for women," and they adapt their preferences to these stereotypes (Kirchner and Vondracek, 1973; Marini, 1978; Siegel, 1973; Tibbits, 1975; and Tully, Stephan, and Chance, 1976).[a] In addition, boys have been observed to select a wider variety of occupations than have girls when asked what they expect to do when they are adults (Brady and Brown, 1973).

Girls' early foreclosure of occupational options appears to be related to their understanding of social reality rather than actual narrowed interests. Beuf (1974) observed that many girls said the job they would choose "if they were a boy" was one they really wanted, but felt they could not aspire to as a girl (see also Burlin, 1976). Additional research suggests that girls, in viewing the future, focus attention on marriage and family activities rather than on employment (Iglitzen, 1973). Further, teachers and parents have indicated that career goals are less important for girls than boys (Guttentag and Bray, 1976).

External Factors

Many studies indicate that parents directly affect educational and occupational preferences and choices (Brown, 1970; Horner et al, 1967; Mitchell, 1977; Rehberg and Sinclair, 1970; and Sewell and Shan, 1968a, 1968b). Studies of adolescents indicate parent-child relationships and family structures create substantial differences between adolescent boys and girls in their degree of autonomy, independence, self-regulation, and assertiveness (Bardwick and Douvan, 1972), all of which have been found to be related to occupational achievement. Mothers' work behavior also has been shown to affect daughters' career attitudes and choices (Katz, 1977). Women with working mothers

[a]For a study suggesting that some female high school students may be changing see Farmer (1980).

were observed to be more career-oriented than those whose mothers worked as homemakers, particularly if the mothers had a positive attitude toward their own work (Hoffman, 1974; Klemmack and Edwards, 1973; Tangri, 1972).

Peers are another influence upon the career choice process (Penn and Gabriel, 1976). In adolescence, girls have been observed to be particularly vulnerable to the influence of males in general, and especially to the influence of the significant men in their lives. This can hinder young women since research suggests that men have more traditional attitudes towards women's roles than do other women. In one study (Entwisle and Greenberger, 1972) ninth grade boys were found to disapprove strongly of women holding "men's jobs," and another study of college students (Komarovsky, 1973) found men placed numerous restrictions upon their wives working outside the home. The young men indicated a woman with a preschool child should only work outside the home "...provided, of course, that the house is run smoothly, the children do not suffer and the wife's job does not interfere with her husband's career." Furthermore, girls in nontraditional vocational training courses tended to name male peers as their most frequent critics (Lewis and Kaltreider, 1976; Ott et al, 1980). Thus, it would appear that the attitudes of certain men may limit the aspirations of some young women. On the other hand, several studies found that strong support and encouragement from significant males are important motivating factors in the pursuit of a career, particularly for women in nontraditional occupations (Hawley, 1972; Tangri, 1972; Trigg and Perlman, 1976).

Teachers' differential expectations and treatment of boys and girls also has a significant impact upon the students' sex-typed behaviors and attitudes. Chasen (1974), in a classroom observation study, found that teachers discourage aggression more often in prekindergarten girls than in boys and that they directed boys and girls toward sex-typed activities. Boys received encouragement to play with blocks and do woodwork; girls were encouraged to make collages and play in the doll corner. Furthermore, both male and female high school math teachers were found to believe that girls can and should achieve less, and as a result, expected less of them (Ernest, 1976; Levine, 1976).

Other studies have also found differences in teachers' behavior toward male and female students. Research indicates teachers tend to be more critical of boys than girls. They ask boys more questions, praise them more for giving correct answers, and criti-

cize them more for incorrect responses (Brophy and Good, 1970; Jackson and Lahaderne, 1967).

In a review of sex discrimination in guidance and counseling, Harway et al (1976) concluded that guidance counselors and counseling materials perpetuate and reinforce sex role stereotypes and the sex typing of courses and occupations, thus limiting students' career choices. Several studies suggest that girls receive little encouragement from counselors to take "deviant" (nontraditional) academic programs or courses. Haven (1971) found that 42 percent of the girls interested in careers in math or science reported being discouraged rather than encouraged by school counselors to take advanced math courses. And even counselors themselves admitted discouraging girls from taking advanced courses (Casserley, 1975; Luchins, 1976).

Counselors were also observed to give less approval to women with nontraditional career goals than to those with conforming goals (Ott et al, 1980; Thomas and Steward, 1971). They perceived those with "inappropriate" career goals as needing further counseling. In another study in which counseling students counseled a female client portraying a woman trying to decide between education and engineering as a career, 81 percent encouraged the female client to choose the female field with both positive statements about teaching and negative comments about engineering (Schlossberg and Pietrofesa, 1974).

The career guidance tests and the accompanying materials often used by counselors have come under scrutiny recently for sex bias (Birk, 1975). The finding of pervasive sex bias in the tests has led the National Institute of Education to issue guidelines with respect to sex fairness in the tests; the technical information provided to counselors, and the interpretive materials provided to users of the tests.

The evidence reviewed above suggests that if a child has not already accepted the cultural sex-role stereotypes by the time he or she enters school, the educational system exerts considerable pressure to conform to sex-role norms and carries on the work of other socializers in reinforcing conformity to sex-role stereotypes. Through direct and indirect means, numerous external influencing agents - - such as teachers, counselors, peers, curriculum materials, and even the staffing and organization of the schools - - convey the message to their students that sex-role conformity is expected and rewarded, while deviance is punished.

Internal Factors

Career choices are also influenced by factors which are internal to the individual. These factors are linked in complex ways and interact with external influences to impact upon work aspirations. Examples of internal factors include personality dimensions such as locus of control, fear of success, achievement motivation, motivation for employment, and sex-role orientation. Early studies of achievement motivation (McClelland et al, 1953) conceived it as a relatively stable personality disposition - - learned early in childhood - - that is dependent upon striving for excellence or success. Crandall and associates (1965) noted three factors that determine achievement motivation in any given situation: the expectation of success; the value attached to that particular type of achievement, and one's standards of performance.

For many years researchers did not examine female achievement motivation because early findings, based on the assumption that male and female achievement motivation were governed by the same factors, were contradictory and ambiguous. In light of the research void on the topic, Horner's (1968, 1969, 1970, 1972) findings are particularly enlightening. Her work suggests that women become anxious about achieving success because they expect negative consequences, and thus they have a "motive to avoid success."

Research findings support the suggestion that achievement motivation is channeled differently in boys and girls from an early age. Girls do better on tasks defined as feminine or sex appropriate (Milton, 1959; Stein, 1971) and, as they grow older, are increasingly reluctant to directly compete with boys. As they reach adolescence, many girls perceive occupational success as negatively instrumental for marriage, which for a female is a traditional measure of success.

Rather than an underlying motive to avoid success, however, it appears that women's achievement motivation can be better explained in terms of the extent to which they solve the perceived achievement-femininity conflict. The women with the most traditional sex-role ideologies avoid all kinds of achievement, except that achieved vicariously (e.g., through the success of their husbands). Other women find achievement of occupational success in a traditionally feminine field or activity, and even competition with women, to be acceptable; while viewing achievement in a male occupation to be inappropriate. Another, smaller group of women reject the traditional sex-role ideology and are freer to strive for achievement in any context.

Some of these women deal with the conflict by "cognitively feminizing" their work role (Laws, 1976); others "compensate" for achievement by striving to be incontrovertibly feminine in behavior and appearance, and other women hide their accomplishments.

Lower achievement orientation in females arises from certain childrearing practices. Girls' dependency is often tolerated and even encouraged by overprotective parents. High academic and occupational achievement is facilitated by a balance between high parental demands for independence and achievement, combined with the freedom to explore, and a moderate level of maternal nurturance, warmth and affection.. Such a balance is more often found in boys than girls.(Barry et al, 1957). High achieving girls tend to be those who have attained a degree of psychological distance from their families and evolved a sense of separateness as a person (Bardwick and Douvan, 1972).

Another factor influencing future expectancies and subsequent achievement striving is the manner in which men and women account for their own successes or failures. A person may attribute success or failure to external factors (i.e., luck and task difficulty) or internal factors (i.e., effort and ability) (Holden and Rotter, 1962). Theoretically, maximum self-esteem and striving would be associated with a tendency to make internal attributions for success and external attributions for failure. Males tend to have higher expectations for their own success and, when they succeed, attribute it to internal forces. They tend to see their failures, however, as a matter of bad luck. Because luck can change, they are likely to persist in their striving. Women, on the other hand, tend to have lower estimates of their own abilities; they often attribute success to external factors but internalize failure as their own fault, and are thus far less likely to continue striving (Feather and Simon, 1973; Levine et al, 1976; Nicholls, 1975).

Persons with an internal locus of control are also more likely to take action to better their life conditions (Gore and Rotter, 1963). They appear to have a greater need for independence (Crowne and Liverant, 1963) and are more resistive to subtle attempts at influence (Getter, 1963; Gore, 1963, Strickland, 1963). Midgley and Abrams (1974), in a study of college students, concluded that externally controlled women seemed to be less autonomous and less likely to penetrate the social barriers that may present obstacles to achievement.

Sex-role orientation is yet another dimension influencing a young woman's career aspirations. Bem (1974), in her classic study of sex-role orientations, hypothesized that people differ in their selection of masculine, feminine, and androgynous (i.e., either masculine or feminine depending on their situational appropriateness) personality characteristics when asked to describe themselves. She has suggested that sex-typed individuals (i.e., those who use only masculine or feminine descriptors) might be seriously limited in the range of behaviors available to them as they move from situation to situation. Indeed, Rossi (1965) reports that women who aspired to the "masculine" fields of engineering and science held more liberal sex-role notions than did those who aspired to female traditional occupations.

Studies have shown that highly sex-typed individuals are motivated to keep their behaviors consistent with an internalized sex-role standard. To do this, they presumably suppress any behaviors which might be considered inappropriate for their sex (Kagan, 1964; Kohlberg, 1966). Thus, a narrowly masculine self-concept might inhibit behaviors that are stereotyped as feminine, and a narrowly feminine self-concept might inhibit behaviors that are stereotyped as masculine. In contrast, a mixed or androgynous self-concept might allow engaging in both "masculine" and "feminine" behaviors. Studies, like Rossi's (1965), that have related sex-role orientations to career choices have typically found that the more traditional one's orientation is, the more sex-typed one's choice of career tends to be (Davis et al, 1980; Zuckerman, 1976). Furthermore, sex-role conflict has been shown to be related to how seriously one considers enrolling in non-traditional courses (Denbroeder and Thomas, 1980).

A woman's choice of a career may also be largely influenced by the extent to which she is committed to hold a job outside of the home. Research has found that female high school and college graduates with a strong career commitment tend to pursue nontraditional occupations after graduation (Almquist and Angrist, 1970; Astin, 1968; Bielby and Bielby, 1976). Spitze and Waite (1978) propose that the relationship between taste for work and nontraditional occupations may result from either a rejection of the societal notions of femininity or an assumption that male occupations both require and reward job dedication.

Besides being influenced by such dimensions as family background and sex-role orientation, a man or woman's career choice is largely influenced by the type and num-

ber of barriers s/he sees to pursuing the particular career. Previous research has identified three barriers to full female participation in male-dominated occupations; they are institutional, situational, and dispositional (Ekstrom, 1972; Westervelt, 1975).

Institutional barriers have been defined as those concerning admission policies, financial aid practices, institutional regulations, and staff attitudes. The majority of studies in this area have examined the effect of teacher and counselor attitudes on vocational education enrollment. They suggest that whether a teacher's or counselor's attitude will act as a barrier to a student's vocational enrollment depends on whether the teacher or counselor actually holds negative or sex-stereotyped attitudes regarding vocational training. And, whether the student perceives and is influenced by these sex-stereotyped attitudes in his/her choice of vocational training. Research has shown that vocational education personnel do hold sex-stereotyped attitudes about male and female roles (Dittmann, 1977; Pietrofesa and Schlossberg, 1971; Roby, 1972). However, some results suggest that the attitudes of the educational staff members have little influence upon a student's choice of a career (Kane, et al, 1976; Lewis and Kaltreider, 1976).

Class materials which are biased against women - - depicting only males in the occupation - - may also be perceived as a barrier to the enrollment of women in a male-dominated program. Vetter, et al (1979) has shown that sex-stereotyping is prevalent in educational materials, and other research indicates that these sex-stereotyped materials may have an effect on vocational choice. In a study of the effect of a 10-minute slide/audiotape presentation depicting males or females performing different occupational roles in the sex-balanced field of computers, boys and girls were observed to prefer the occupations presented by the like-sex models (Plost and Rosen, 1974).

Situational barriers involve family responsibilities, financial need, and societal pressures. The societal pressure which has been most extensively studied in relation to vocational choice is the attitude of peers. The most frequent critic of a woman's decision to enter a male-dominated course is her male friends (Lewis and Kaltreider, 1976). Thirty percent of nontraditional females reported that they were teased about their choice of study compared with only 10% of traditional females. Kane, et al (1976) also noted that nontraditional females believe the male students have a problem adjusting to them - - especially when there are fewer than four women in a class. Furthermore, a significantly higher

proportion of nontraditional females felt "looked down on" by other students than did traditional students (Lewis and Kaltreider, 1976).

Lewis and Kaltreider (1976) found that the career choices of 90% of nontraditional females were influenced by their peers. Penn and Gabriel (1976) supported the importance of peer influence upon students' career choices after finding it second in importance only to that of parents.

Women also may be deterred from nontraditional vocational training because of the difficulty they perceive in becoming employed in that field. Kane, et al (1976) revealed that although a greater percentage of nontraditionals students are employed, more traditional students (60%) than nontraditional students (48%) are employed in occupations related to their area of study. Nontraditional females anticipate encountering significantly more sex discrimination in getting the kind of job they want than do the traditional females (Lewis and Kaltreider, 1976). In a study of community college women, Eliason (1977) found that although 82% of the women did not anticipate any sex-related problems in getting hired, they did, however, anticipate encountering sex discrimination in some form in their occupational pursuits.

Dispositional barriers include fear of failure, attitude toward intellectual activity, role preference, level of aspiration, dependence, and inferiority feelings. A major focus of this research is upon the women's perception of their lack of preparation. It is well known that as women progress through school they take comparatively fewer math and science courses at each grade level than do men. However, the number taken by traditional as compared with nontraditional females is nearly the same. Kane, et al (1976) found that more than half of the nontraditional students they surveyed felt their high school education had not prepared them for their post-secondary vocational training. In contrast, only 25% of the women in female-traditional programs felt unprepared. In fact, 22% of the nontraditional high school females studied by Lewis and Kaltreider (1976) cited "lack of background in the area" as a problem for them in their vocational courses as compared with eight percent of the traditional females.

The present study examines the relationship between traditionalism of career choice and several internal and external factors that are likely to affect such a choice. Enrollment by a woman in a vocational education program designed to prepare students for a traditionally male occupation, such as carpentry, represents a nontraditional career choice by that woman.

In the present study, women who have made nontraditional vocational choices are compared with those who have made more traditional choices. Comparisons are made between the groups on potential external influences, such as the attitudes of other people close to them (e.g., parents, teachers, friends), as well as internal factors, such as sex-role orientation and fear of success. Such comparisons are expected to aid in explaining why some women choose traditionally feminine career goals, while others opt for careers that have traditionally been held by men.

III. METHODOLOGY

Data were collected during the months of April through June, 1980 from 470 female students who were currently enrolled in a vocational training program at one of nine California public school sites - - three high schools, three Regional Occupational Centers/Programs (ROC/ROP), and three community colleges. The sites were selected using a two-step procedure. First, the 45 sites (15 secondary, 15 ROP, and 15 community colleges) having the largest percentage of females enrolled in nontraditional vocational training programs (i.e., agriculture, technical, trade and industrial) were selected through use of the 1978-1979 California State Vocational Enrollment data (VEA-48).[a] Next, these sites were classified as being in either upper, middle or lower socio-economic areas. This classification was based upon a review of the mean household income data for the geographic areas in which the districts were situated, as provided by the 1970 Census. From among the 45 sites, 14 were classified as reserting upper income areas, 19 as representing middle income areas, and 12 as representing lower income areas. A total of eighteen sites were then randomly selected - - six within each of the three socio-economic status categories representing two secondary, two ROP, and two community college districts. These 18 sites served as the potential sample pool from which the actual sample of nine sites was randomly drawn (see Table 1). A sample pool twice the size of the intended sample was considered desirable because of the possibility that some districts would refuse to participate, or have time constraints which would make it impossible to schedule data collection

Table 1: Study Design

Type of Site	Socio-economic Status Category		
	Lower	Middle	Upper
ROP	1	1	1
Secondary District	1	1	1
Community College District	1	1	1

Contact of Sample Sites

Letters were sent to each of the 18 sites by either the California Assistant State Director for Vocational Education or the Vice-Chancellor, California Community

[a] A nontraditional program was, for purposes of this study, a program where at least 80 percent of the students enrolled in California during 1977-1978 were males.

Colleges. The letters informed the district personnel of the purpose and procedures of the study and requested their participation.

Approximately three weeks after the letter was sent, the project staff contacted the superintendent or president at each site to answer any questions they had and to request the participation of their district/ROP in the study. This sample contact procedure yielded a very high acceptance rate. Only one of the sites contacted refused to participate. From the remaining 17 sites, nine were chosen at random for inclusion in the study.

Once a district/ROP agreed to participate in the study, the actual selection of both classrooms and schools/colleges within a particular district was determined by the district/ROP administrative personnel, with the assistance of the project staff. At each site approximately 20-40 women enrolled in male traditional vocational training programs and another 20-40 enrolled in female traditional programs participated in the study (See Table 2).

Table 2: Number of Respondents Per Site

Type of Site	Type of Student		
	Nontraditional	Traditional	TOTAL
High School			
1	22	26	48
2	19	18	37
3	22	23	45
TOTAL	63	67	130
ROP			
1	46	47	93
2	26	21	47
3	31	27	58
TOTAL	103	95	198
Community College			
1	18	23	41
2	30	22	52
3	32	17	49
TOTAL	80	62	142

Characteristics of the Sample

The sample consisted of 224 "Traditional" students (i.e., women enrolled in vocational education classes in which the enrollment in California during 1977-1978 was at least 80 percent female) and 246 "Nontraditional" students (i.e., women enrolled in vocational education classes in which the enrollment in California during

1977-1978 was at least 80 percent male). Among the 224 traditional students, 117 had previously considered taking a traditionally male class or program, but had decided against it. An overview of the demographic characteristics of the Traditional and Nontraditional students is presented in Table 3 below.

Table 3: Demographic Characteristics of Study Sample

	Traditional (N=224)	Nontraditional (N=246)
Mean Age	19.9	19.8
Ethnicity:		
Anglo	72%	75%
Black	3	5
Mexican-American	11	10
Latin-American	2	1
Asian American		
Other Oriental	1	
American Indian	6	6
Marital Status:		
Single-no steady boyfriend	36%	38%
Single-steady boyfriend	44	45
Married	10	12
Separated	4	1
Divorced	6	4
Widowed	1	0
Family Income:		
<$10,000	24%	25%
$10,001-15,000	8	11
$15,001-20,000	13	15
$20,001-25,000	13	13
$25,001-30,000	15	10
>$30,001	27	26

The respondents were currently enrolled in a wide variety of vocational programs. The Traditionals were undertaking training in health, office and home-economic areas; whereas the Nontraditionals were enrolled in programs such as electronics, metals and agricultural mechanics. The Nontraditionals had completed an average of 2.4 courses not usually taken by women and Table 4 provides a summary of the type of courses they were taking (See Table 4).

Table 4: Nontraditional Students Course of Study

Program Area	Number of Students
Trade and Industrial (e.g., construction, metals, masonry, welding)	77
Technical (e.g., electronics, printing, mechanical drawing, police science)	99
Agriculture (e.g., agricultural mechanics, animal husbandry, agricultural production)	24
Trade and Industrial plus Technical	28
Technical plus Agriculture	9
Trade and Industrial plus Agriculture	4
Trade and Industrial, Technical and Agriculture	4

Instrument

The self-administered questionnaire required approximately 45 minutes to complete. It included items reflecting five primary clusters of variables: 1) demographics/family background; 2) support/encouragement from important others to enroll in nontraditional programs; 3) peer experience with nontraditional programs; 4) personality dimensions and sex-role orientations; 5) perceived barriers to enrolling in a nontraditional program (see Appendix I for a copy of the actual questionnaire).

Demographics/family background. Each respondent was asked a number of questions about her family background, such as what was the size of her family of origin, what were her parent's childrearing practices (e.g., demand for achievement, protectiveness), what were her parents' educational attainment, what was her mother's employment history (e.g., number of hours employed weekly, number of years employed, occupation, occupational prestige as assessed by the Duncan Socio-economic Index [see Reiss et al, 1961], and what was the respondent's age when her mother started working). Questions were also asked regarding the respondent's employment history and demographic background (e.g., age, ethnicity, marital status and total family income).

Support/encouragement. A series of questions were designed to assess the amount of support and encouragement the respondent either received from "important others" (e.g., mother, father, sister, brother, girlfriend, boyfriend/husband, teacher, counselor) or ex-

pected to receive if she decided to enroll in a nontraditional vocational program. The respondents were first asked whether any of the above individuals had ever 1) encouraged them to take or 2) discouraged them from taking a class not usually taken by a woman. Then they were asked to rate, using a five-point scale from "1" equaling very unsupportive to "5" equaling very supportive, how supportive they felt each important other was or would be of their decision to enroll in a nontraditional class. The respondents were also asked whether a school counselor or teacher had ever given them the impression they would do well or poorly in a nontraditional program.

Peer experience. Respondents were asked whether any of their female friends, male friends, brothers or sisters had ever taken a course not usually taken by members of their sex.

Personality and sex-role orientation. Commonly used psychological measures were employed to assess sex-role attitudes and other personality factors. To measure sex-role orientations, the Bem Sex-Role Inventory (BSRI) (Bem, 1974) was employed, providing a self-report measure of both masculinity and femininity. The difference between a person's endorsement of masculine and feminine personality characteristic allows for the classification of a person as being either masculine, feminine, androgynous or undifferentiated. Beckman's (1976) index of the perceived advantages and disadvantages of employment was also used to measure work commitment. Measures designed to assess the internal factors of fear of success (Zuckerman's Fear of Success Scale, 1976) and locus of control (Rotter's Internal-External Locus of Control Scale, 1966) were also used.

Perceived barriers. Barriers to enrolling in a nontraditional program were assessed by a 10-item scale describing various obstacles, both perceived and actual, to a student's enrollment in a nontraditional course. Respondents who had either taken or considered taking a male-traditional course completed the scale by indicating whether any of the ten potential barriers caused them concern when making this decision. The respondents answered either "yes" or "no" to each of the potential barriers.

IV. Results

Data Analysis Overview

Variables in the present study can be categorized as being either external or internal. The external variables include: demographics/family background, support from important others, and experience of peers with nontraditional programs. The internal variables are: personality dimensions, sex-role orientations, and perceived barriers to enrolling in a nontraditional course.

The data from this study were analyzed using a two-step process. First, a series of analyses of variance and t-tests were computed to identify those variables which significantly differentiate women who pursue nontraditional careers from those who pursue traditional careers. Secondly, stepwise discriminant analysis was used for a series of integrative analyses contrasting the Nontraditional students with both the Traditionals and Considereds (e.g., those who had considered taking a nontraditional course, but never did). Those variables which were found in Step 1 to discriminate between the student subsamples (e.g., Traditional versus Nontraditional or Considered versus Nontraditional) at a minimum .10 level of significance, were included in the more powerful analyses.

Many of the analyses presented in this report are based on discriminant analysis. Discriminant analysis begins with the desire to statistically distinguish between two or more groups of cases. Stepwise discriminant analysis selects the "best" set of discriminating variables, selecting independent variables for entry into the analysis on the basis of their discriminating power. The mathematical objective of discriminant analysis is to weigh and linearly combine the discriminating variables in some fashion so that the groups are forced to be as statistically distinct as possible.

The stepwise discriminant analysis process begins by choosing the single variable which has the highest value on the selection criterion. This initial variable is then paired with each of the remaining independent variables. The new variable which in conjunction with the initial variable produces the best criterion value is selected as the second variable to "enter the equation." This procedure of locating the next variable that would yield the best criterion score - - given the variables already selected - - continues until all variables are selected or no additional variables provide a minimum level of improvement (see Nie et al, 1975).

One possible caution regarding discriminant analysis is that intercorrelations often exist between certain

of the independent variables being studied. When sizable correlations exist between independent variables, interpretation of the relative effects of each variable in the analysis becomes difficult (Kerlinger and Pedhazur, 1973). The effect of high intercorrelations (i.e.,multicollinearity of variables) is most evident when two highly correlated variables may have large and nearly equal F scores to enter, i.e., a high correlation with the criterion. The variable most highly correlated with the criterion (controlling for the effects of any other variable that may have previously entered the equation) enters the equation. Correspondingly, the relationship of the second independent variable to the criterion (now controlling for the effects of the variable that has entered the equation) drops greatly. This problem of high intercorrelations between certain independent variables also affects the apparent stability of the measures, since when a series of variables are highly intercorrelated, slight changes in sample composition or measurement of the dependent variables may cause fluctuations in both the variables which enter the equation and the order in which they enter. Nevertheless, in order to examine the impact of various internal and external factors upon a woman's career choice, a series of discriminant analyses were computed. The data is discussed below both separately for each of the clusters of variables and collectively in terms of the relationship between the groups and the set of independent variables being examined.

External Variable Differences

Demographic/family background variables.

The data were first examined to identify the prevalence of any significant differences between the Traditional and Nontraditional students in terms of demographics and family background history. A series of *t*-tests were done and significant differences were revealed between Traditional (T) and Nontraditional (NT) students in terms of their parents' educational levels and parenting styles. On the average, mothers and fathers of Nontraditional students had completed more years of school than had the parents of Traditional students (mothers' education: T=3.8, NT=4.4[a] [t=2.98, df=1,413, $p<.01$]; fathers' education: T=4.4, NT=4.9 [t=2.04, df=1,387, $p<.05$]). When asked about their parents' childrearing practices, Traditional students indicated that their parents were more protective and worried about them than did the Nontraditional students (t=2.39, df=1,439, $p<.05$).

No significant differences were noted between the Traditional and Nontraditional students in age, year in school, number of siblings, household income, or mothers' work experience. The data did reveal that 81 percent of the respondents had mothers who had been employed and over 70 percent of their mothers were currently working an average of 29 hours per week. Furthermore, the students were about 7 years old when their mothers started working outside the home. This high rate of employment among their mothers may be due to the fact that 31 percent of the students came from single parent families.

However, there were differences between Traditional and Nontraditional students in their own work experiences. Nontraditional students were more likely to have been employed than Traditional students (T=75.5%, NT=83.7% [X^2=4.90, df=1,468, $p<.05$]) and as would be expected, Nontraditional students were more likely than Traditional students to have been employed in nontraditional jobs such as craftsworker, laborer, or operative (T=0.6%, NT=11.9% [X^2=18.08, df=2,359, $p<.001$]). Nontraditional students also were employed significantly more hours per week during the school year than Traditional students (T=12.3, NT=16.1 [t=3.00, df=1,466, $p<.01$]).

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[a]Coded from 1=eighth grade, to 8=graduate school

Support Variables

One aim of the present study was to investigate the degree of influence "important others" have upon a young woman's career choice and to identify which individuals exert the most influence. As a first step in studying this question, the amount of support the student receives or expects she would receive if she enrolled in a nontraditional class was inspected through a series of t-tests (see Table 5). The Nontraditional students were contrasted with both the Traditionals and those who considered taking a nontraditional course but decided against it (Considered) separately because the Considereds were viewed as a unique group sharing certain qualities with both the Traditional and the Nontraditional students. Also, it was believed that an examination of the data separately for the three subgroups would provide information of value to those who are attempting to foster women's enrollment in male-dominated vocational training programs.

The data presented in Table 5 indicate that the students who received the most support from important others were the Nontraditionals followed by the Considereds. The Traditionals received the least amount of support in all cases but one - - the Considereds received less support from their instructors than did the Traditionals. Each of the three subgroups indicated that they perceived the least support from the male students in the class; whereas the female students in the class were perceived as being the most supportive of their decision to enroll in a nontraditional course.

Table 5: Mean Ratings of Degree of Support from Important Others[a]

	Means[b]		
	Traditionals (N=107)	Considereds (N=117)	Nontraditionals (N=246)
Mother	3.75**	4.01	4.19
Father	3.68***	3.96*	4.26
Brother	3.45**	3.65*	3.97
Sister	3.46*	3.79	3.92
Boyfriend/Husband	3.48*	3.60*	3.98
Female Friends	3.80*	3.95	4.06
Male Friends	3.30***	3.49*	3.83
Female Students	4.01	4.10	4.10
Male Students	3.07***	3.26***	3.73
Instructor	3.72**	3.66***	4.18
Counselor	3.88	3.85	3.99

*p<.05, **p<.01, ***p<.001

[a]Two series of t-tests were computed: one for the Traditional versus Nontraditional students and another for the Considereds versus the Nontraditionals.

[b]Each question was rated on a five-point scale from 1= very unsupportive to 5=very supportive.

The t-tests revealed significant differences between the Traditional and the Nontraditional students ($p<.05$) for most of the eleven persons or groups of persons they were asked about, except for two - - female students and their counselor. There were also differences between the Nontraditionals and the Considereds in the amount of support received or expected from many of the important others they knew. It is particularly interesting to note that these significant differences were present only for the men in their lives - - their father, brother, boyfriend, male friends, male students and male vocational instructors.[a]

In order to identify whose support has the greatest impact upon a woman's decision to enroll in a nontraditional course, as well as the magnitude of the effects of each support variable independent of the others, two discriminant analyses were computed - - one for the Traditionals versus Nontraditionals and another for the Considereds versus Nontraditionals (see Table 6). In the Traditional versus Nontraditional analysis only three variables entered the equation - - "male students," "female students" and "instructor." Male students was the first variable to enter, explaining nine percent of the variance between the two groups. A total of 16% of the variance was explained by these three variables.[b]

Six variables entered the Considered versus Nontraditional equation explaining a total of 25% of the variance between the two groups. Once again, male students was the first variable to enter the equation, explaining 11% of the variance, followed by female students and then by counselor, instructor, boyfriend/husband, and male friends. As was noted in the earlier discussion of the t-test differences between the Considereds and Nontraditionals, the individuals whose support significantly differentiates these two groups tend to be males, male students, male instructors, boyfriends/husbands and male friends.

An interesting finding was revealed in the discriminant analyses, which may be a result of the fact that these analyses could only be computed for those few individuals who rated each of the 11 important others (22 Traditionals, 31 Considereds and 51 Nontraditionals), thus

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[a]It is assumed that the vast majority of the instructors of male-dominated classrooms are men. Houser et al (1979) revealed that less than 10% of the instructors of California Agriculture, Trade and Industrial, and Technical vocational programs in 1978-79 were women.

[b]R^2=1-U statistic after entry of the final variable in the equation.

had each type of important other (e.g., brother, boyfriend, etc.) in their lives. This finding was that female friends was the second variable to enter both of the equations. However, in the earlier t-tests there were no significant differences between either the Traditionals and the Nontraditionals or the Consideredss and the Nontraditionals on this particular variable.

Table 6: Stepwise Discriminant Analysis for Support of Important Others[a]

	Traditional versus Nontraditional Students			
			Mean[b]	
	F to enter	U-Statistic after entry	Traditional	Nontraditional
Male students	6.83	.91	3.36	3.96
Female students	3.67	.87	4.09	4.10
Instructor	2.16	.84	3.73	4.24

	Considered versus Nontraditional Students			
			Means	
	F to enter	U-Statistic after entry	Considered	Nontraditional
Male students	9.54	.89	3.23	3.96
Female students	7.86	.81	4.35	4.09
Counselor	3.28	.78	3.84	4.04
Instructor	1.24	.77	3.68	4.24
Boyfriend/husband	0.94	.76	3.51	4.04
Male friends	0.76	.75	3.51	3.89

The respondents were also asked whether a counselor or teacher had ever given them the impression they would do poorly or well in a male-dominated course (see Table 7). As would be expected, the Nontraditionals were told most often that they would do well in a nontraditional course (48.2%); whereas 27% of the Consideredss and only 14% of the Traditionals were told this. Furthermore, more of the Consideredss were told they would do poorly in a male-traditional course (9.5%) than were the Nontraditionals (7.0%) or the Traditionals (0.9%).

[a]These analyses could only be computed for those students who rated each of the "important others" (i.e., mother, father, brother, sister, boyfriend/husband, female friends, male friends, female students, male students, instructor, counselor). As a result of the large number of respondents who did not have a particular important other in their lives (e.g., brother, sister, boyfriend) these analyses included only 22 Traditional, 31 Considered and 51 Nontraditional students.

[b]Items were rated on a five-point scale from 1=very unsupportive to 5=very supportive.

Table 7: Percent Indicating Respondent Would Do Well/ Poorly in a Nontraditional Course[a]

	Say Do Well		
	Traditionals	Considereds	Nontraditionals
Counselor	1.8%**	10.5%	11.9%
Teacher	7.4%**	4.3%**	18.5%
Both	4.7%**	12.0%	17.7%
TOTAL	13.9%**	26.6%*	48.1%

	Say Do Poorly		
	Traditionals	Considereds	Nontraditionals
Counselor	0.9%	2.6%	3.3%
Teacher	0.0%	4.3%	2.1%
Both	0.0%	2.6%	2.0%
TOTAL	0.9%*	9.5%	7.0%

*$p \leq .01$ **$p \leq .001$

Next, the respondents were asked whether any of the important people in their lives had ever encouraged or discouraged them with regards to pursuing a male-dominated occupation, or if they perceived any of the important others as likely to do so. Repeating the previous findings, the results indicate that the Nontraditional students were most often encouraged to enter a nontraditional course, followed by the Considereds and lastly by the Traditionals (see Table 8). In fact, when the students were asked about these ten types of "important others" (e.g., mother, boyfriend, teacher, etc.) the Nontraditionals specified that over 60% of their parents had encouraged them to pursue a nontraditional career. However, only 19% of the Traditional students had either been encouraged by their parents or believed that their mothers or fathers would encourage them if they ever wished to undertake a nontraditional course of study. After parents, the next most encouraging individuals were the respondents' girlfriends.

The students who had previously considered a nontraditional program but decided against it were generally the ones who either received or perceived the most discouragement from the important others in their lives. The data also revealed that the respondents' boyfriends were identified as the most discouraging, with over 15% of the Nontraditionals signifying that their boyfriends either did not or would not approve of their undertaking a course not usually taken by a woman.

[a]Two series of X^2's were computed: one for Traditional versus Nontraditional and another for Considered versus Nontraditional.

Table 8: Percent of Specific Important Others Who Encouraged/Discouraged Respondent[a]

	Encouragement			Discouragement		
	Traditional (N=107)	Considered (N=117)	Nontraditional (N=246)	Traditional	Considered	Nontraditional
Mother	18.7	45.3	64.9	5.6	8.5	6.6
Father	19.6	47.0	58.5	5.6	7.7	5.0
Brother	15.9	25.6	36.3	4.7	10.3	3.8
Sister	8.4	28.2	37.2	3.7	5.1	2.9
Girlfriend	18.7	35.0	48.5	8.4	10.3	4.2
Boyfriend	9.4	27.4	41.1	11.2	15.4	7.9
Husband	1.8	4.3	7.8	0.9	4.3	3.7
Teacher	15.9	29.9	47.7	1.8	3.4	5.5
Counselor	16.8	28.2	41.4	4.7	5.1	6.8
Employer	2.8	12.0	25.6	0.9	0.9	2.4
OVERALL AVERAGE	12.8*	28.3*	40.9	4.8	7.1	7.5

*$p \leq .001$

[a]Two X^2 were computed for the Overall Average only: one for Traditional versus Nontraditional students and another for Considered versus Nontraditional students.

To further examine the findings regarding important others, summary scores were derived according to both sex and type of important other - - male or female, and either family member, friends, school personnel, or classmate. In addition, the data were combined for all "important others" to provide an index of the total amount of encouragement, discouragement and support the respondent received. The data presented in Table 9, reveal that once more there are significant differences ($p<.01$) among the student subgroups in the amount of encouragement they received or believe they would receive from all types of important others. However, the only significant differences in the amount of discouragement they received came from their friends and the male important others in their lives ($p\leq.05$).

Table 9: Number of Important Others Who Encouraged/ Discouraged Respondent[a]

	Encouraged			Discouraged		
	Traditional	Considered	Nontraditional	Traditional	Considered	Nontraditional
Family	1.07***	1.47**	1.95	0.27	0.32	0.18
School Personnel	0.48***	0.59**	0.86	0.08	0.08	0.12
Friends[b]	0.50***	0.67**	0.96	0.26*	0.30**	0.16
TOTAL	2.13***	2.85***	4.02	0.61	0.72	0.48
Females	0.80***	1.09**	1.48	0.21	0.24	0.14
Males	0.78***	1.05**	1.42	0.31*	0.38*	0.20

*$p<.05$
**$p<.01$
***$p<.001$

Again, the Nontraditionals consistently received the most encouragement, followed by the Considereds and lastly by the Traditionals. Each one of the Traditional versus Nontraditional comparisons (t-tests), in terms of the amount of encouragement received, proved to be significant ($p\leq.001$), as were each of the Considered versus Nontraditional comparisons ($p<.01$). However, as before, the Considereds received the largest amount of discouragement, followed by Traditionals, and lastly by the Nontraditionals. But few of these comparisons were significant.

[a]Two sets of t-tests were computed: one for Traditional versus Nontraditional and the other for Considered versus Nontraditional.
[b]Friends included girlfriend plus boyfriend/husband.

The data in Table 10 again illustrates that the Nontraditional students receive more support to enter a nontraditional field from every type of important other in their lives than do either the Traditionals or Considereds. The only comparison which was not significant ($p>.05$) was for the Considereds versus Nontraditionals on the amount of support they receive from female important others.

Table 10: Mean Amount of Support from Important Others,[a,b]

	Traditional	Considered	Nontraditional
Family	3.76***	3.87*	4.12
Friends[c]	3.61***	3.71*	3.94
Classmates	3.61***	3.66*	3.92
School Personnel	3.74***	3.72***	4.14
TOTAL	3.69***	3.78**	4.02
Females	3.87**	3.96	4.09
Males	3.51***	3.62**	3.93

*$p<.05$
**$p<.01$
***$p<.001$

Peer Experience Variables

As was previously discussed in the earlier literature review and highlighted by the previous support variable findings, peers tend to be an important influence upon the career choice process. It was therefore felt that a young woman who has a friend or sibling who has taken a nontraditional class would be more likely to take one herself than a student without a role model. To examine this question, the respondents were asked whether any of their male friends, female friends or siblings had ever taken a nontraditional course. The data in Table 11 revealed Nontraditional students were more likely than both Traditional students and Considereds to have had female friends and siblings who had taken a nontraditional course. The data also revealed a large number of the respondents had friends or siblings who had taken a course not usually taken by members of their sex. In fact, approximately 70 percent of the respondents had

[a]Items were scored on a five-point scale from 1=very unsupportive to 5=very supportive
[b]Two sets of t-tests were computed: one for Traditional versus Nontraditional and the other for Considered versus Nontraditional.
[c]Friends included girlfriend plus boyfriend/husband.

male friends who had taken a course not usually taken by a man. Also, 78 percent of the Nontraditionals and 63 percent of the Considereds had female friends who had taken a nontraditional course. Even a sizable number of the respondents (over 35 percent) had brothers and/or sisters who had taken nontraditional courses.

Table 12: Percent of Friends and Siblings Who Have Completed a Nontraditional Course[a]

	Traditional	Considered	Nontraditional
Female Friends	31.4**	63.2*	77.9
Male Friends	67.3	72.8	66.3
Siblings	27.3**	30.1*	45.8

*$p < .01$
**$p < .001$

[a]Two series of X^2's were computed: one for Traditional versus Nontraditional students and another for the Considered versus Nontraditionals.

Internal Variable Differences

Personality and Sex-Role Variables[a]

Over the years, certain personality dimensions have been viewed as influencing an individual's career decision-making. The different career paths taken by men and women have often been attributed to the differences in their locus of control orientation and fear of success tendency. It was therefore felt that these same factors may help to explain the differences between women in career aspirations. As a means of determining whether differences existed between the Traditional and Nontraditional students, a series of t-tests were computed. The data presented in Table 12 indicates the Traditional students significantly differed from Nontraditional students on one of the two personality measures included in the study. Traditional students scored significantly higher than Nontraditional students on the Zuckerman Fear of Success Scale (FOSS) which was designed to assess individual differences in the motive to avoid success. However, no significant differences were observed between the Traditional and Nontraditional students on Rotter's Internal-External Locus of Control Scale which measures a person's perception of contingency relationships between his/her own behavior and events that follow that behavior.

Sex-role orientation is yet another factor which may explain why some women pursue a traditional occupation while others pursue one which is not traditional. As was discussed previously, Bem has hypothesized that sex-typed individuals might be seriously limited in the behaviors available to them. To test this assumption, the Bem Sex-Role Inventory scores of the Traditionals and Nontraditionals were compared through the use of t-tests. The data revealed the Nontraditional students obtained significantly higher scores than the Traditionals on the Masculinity scale, and significantly lower scores than the Traditionals on the Femininity scale (see Table 12). As a result, Traditionals had a significantly higher difference score than did the Nontraditionals, indicating that they were more sex-typed than the Nontraditional students.

[a]Previous research has shown that socio-economic status is related to some psychological variables (Evanoski and Maher, 1979). Therefore, the analyses described in this section of the report were repeated using fathers' education, mothers' education, or respondents' income (depending on who the respondent lived with) as a covariate in an Analysis of Covariance. Partialing out the covariate did not affect any of the significant results discussed in this section of the report; thus, the observed differences between the Traditional and Nontraditional students on these particular psychological variables cannot be attributed to social class differences between the groups.

Table 12: Mean Values for the Internal Variables

Variable	Traditional	Nontraditional
Locus of Control (Rotter)[a]	3.95	3.60
Fear of Success (Zuckerman)	109.02	104.74**
BSRI Masculinity (Bem)	4.73	5.05***
BSRI Femininity (Bem)	5.94	5.80*
BSRI Social Desirability (Bem)	4.86	4.86
BSRI Femininity - Masculinity (Bem)	1.22	0.74***
Rewards of Employment (Beckman)	5.47	5.56
Costs of Employment (Beckman)	4.25	4.12
Rewards - Costs of Employment (Beckman)	1.22	1.42

*$p<.05$, **$p<.01$, ***$p<.001$

To further examine sex-role orientation, the Beckman motivation for employment scale was utilized. However, no significant differences were observed between the two groups of students.

Continuing this line of research the respondents were asked a few questions about their marriage and career plans. As revealed in Table 13, Traditionals were more likely than Nontraditionals to expect to get married, raise a family, and work at a woman's job ($p<.05$). Whereas, Nontraditionals were more likely than Traditionals to expect to work at a man's job or a job done by either a man or a woman ($p<.01$). They were also asked whether they considered themselves more homemaker-oriented or more career-oriented. Nontraditionals were more likely than Traditionals to rate themselves toward the career-oriented end of the scale ($t=3.21$, $df=1,413$, $p<.01$).

Table 13: Plans for the Future[b]

	Traditional	Nontraditional
Get married	3.62	3.21**
Raise a family	3.44	2.95**
Work part-time	2.63	2.46
Work full-time	3.86	4.01
Work at a man's job	1.74	3.13**
Work at a woman's job	3.93	2.91**
Work while I raise a family	2.84	2.67
Work at either a man's or woman's job	3.47	4.08**

*$p<.05$, **$p<.01$

[a]Scored from 0=highly internal to 11=highly external.
[b]Items were rated on a five-point scale from 1=do not expect to, to 5=definitely expect to.

Perceived Barriers

Young men and women are often stopped or hindered from entering a nontraditional career by various barriers. As was described earlier, these barriers are either institutional, situational or dispositional in nature. And any one of them is a possible deterrent to a student's training for a nontraditional career. To identify both the existance and impact of certain barriers, a Hotelling's T-Square was computed for the means from the 10-item barrier scale for those women who enrolled in a male-traditional vocational training course (Nontraditional) versus those who considered but did not enroll (Considered). The data in Table 14 indicate that the Considered women differ significantly from the Nontraditional women. As would be expected, the Considereds saw significantly more barriers to enrolling in a male-traditional program than did the Nontraditionals (T-Square=19.42, df=10,338, $p<.05$).

Since an overall difference was identified by the T-Square, t-tests were computed for the individual means. The differences between the two subgroups were significant for only one of the individual comparisons made - - an institutional barrier - - "Rules restrict the class enrollment to men only" ($t=3.05$, df=1,347, $p<.01$).

The data presented in Table 14 also identify the percentages of each subgroup who considered the potential barriers in their decision to enroll in a male-traditional course. The barriers most often mentioned, which were dispositional, were those dealing with whether the respondents had the necessary background and whether they would do well in the program. Over half of the Considereds took these particular barriers into account when making their decisions, and approximately 44% of the Nontraditionals attended to them.

The data were next examined for those women who had completed vocational training in either Trade and Industrial, Technical or Agriculture program areas only. Any woman who had completed or was currently enrolled in two or more vocational program areas (e.g., Agriculture plus Technical) was excluded from this analysis. A total of 198 of the 246 Nontraditional students were retained. A MANOVA was then computed to test differences among the means of the 10 potential barriers for the Trade and Industrial, Technical, and Agriculture subgroups (Wilk's Lambda=.84, df=20,372, $p<.05$). The data revealed the women in Trade and Industrial programs saw more of the

Table 14: Mean Rating and Percent Selecting Each Barrier to Enrollment in a Male-Traditional Program

	Mean Rating[a]		Percent Selecting	
	Nontraditionals (N=246)	Considereds (N=117)	Nontraditionals (N=246)	Considereds (N=117)
Rules restricted class to men only	1.87	1.70*	13.2	29.0
Friends thought I shouldn't take the class	1.88	1.87	12.3	12.0
People would think I was strange	1.87	1.79	12.8	20.4
Teacher didn't want me to take it	1.93	1.97	7.4	7.4
Counselor didn't want me to take it	1.94	1.92	6.2	7.5
Worried that I did not have the necessary background	1.57	1.48	43.2	52.8
Concerned that I wouldn't do well	1.55	1.50	44.9	50.0
Students in the class didn't want me to take it	1.96	1.94	4.1	5.6
Class materials seemed biased against women	1.90	1.87	10.3	12.1
Thought I'd have trouble finding a job in a male-traditional area	1.83	1.78	16.5	22.2

*$p < .01$
T-Square=19.42 , df=10,338, $p < .05$

[a]A response of "yes" was coded "1" and a "no" was coded "2."

potential barriers as a consideration in their decision to enroll in a nontraditional program than did either the Agriculture (t=-2.79, df=2,195, $p<.01$) or Technical (t=-2.46, df=2,195, $p<.05$) students.

Table 15: Barriers Perceived by Trade and Industrial, Technical and Agriculture Students

	Means[a]		
	T&I (N=76)	Technical (N=98)	Agriculture (N=24)
Rules restricted class to men only	1.84	1.92	1.88
Friends thought I shouldn't take the class[b,c]	1.80	1.91	1.96*
People would think I was strange	1.87	1.89	1.88
Teacher didn't want me to take it[b,c]	1.90	1.97	2.00*
Counselor didn't want me to take it	1.95	1.98	1.96
Worried that I didn't have the necessary background	1.53	1.56	1.58
Concerned that I wouldn't do well[c,d]	1.47	1.53	1.88**
Students in the class didn't want me to take it	1.96	1.98	2.00
Class materials seemed biased against women[b]	1.84	1.97	1.92**
Thought I'd have trouble finding a job in a male-traditional area	1.82	1.84	1.92

Wilk's Lambda= .838, df=20,372, $p<.05$*

*$p<.05$, **$p<.01$

[a]A response of "yes" was coded "1" and a "no" was coded "2."

[b]A significant t-test ($p<.05$) was obtained for Trade and Industrial versus Technical students.

[c]A significant t-test ($p<.05$) was obtained for Trade and Industrial versus Agriculture students.

[d]A significant t-test ($p<.05$) was obtained for Technical versus Agriculture students.

Next ANOVA's and t-tests were computed for the individual subgroup means and these analyses identified a number of significant differences. Differences were revealed among the three subgroups for the following potential barriers: "My friends thought I shouldn't take the class," ($F=3.10$, $df=2,195$, $p<.05$); "The teacher didn't want me to take it," ($F=3.13$, $df=2,195$, $p<.05$); "I was concerned that I wouldn't do well," ($F=6.39$, $df=2,195$, $p<.01$); and, "The class materials seemed biased against women," ($F=4.56$, $df=2,195$, $p<.01$). The data revealed significant differences between the three subgroups in terms of each of the types of barriers - - institutional, situational and dispositional. Furthermore, more of the women in Trade and Industrial programs indicated that each of the above barriers was of concern to them than did the women in either Technical or Agriculture programs. Also, the women in Technical programs more often mentioned they were concerned that they "wouldn't do well" than did the women in Agriculture programs.

Integrative Analyses

The assumption behind this research was that career decision-making is quite complex. It was contended that external factors (i.e., demographics, family background, support from important others, peer experience with nontraditional courses) and internal factors (i.e., perceived barriers, personality and sex-role orientation) would together impact upon work aspirations. Inasmuch as the goal of this study was to identify those variables which differentiate Traditional students from those who are Nontraditional, a series of multivariate analyses were computed to accomplish this task. Included in these analyses were the external and internal variables for which the previous analyses of variance and chi-squares identified differences between the two student groups at a minimum .10 level of significance. Thirty-three variables were uncovered by the series of first-step analyses, eight demographic variables, eighteen support variables, two peer experience variables, and five personality variables. These variables were included in the stepwise discriminant analyses for which the dependent/grouping variable was whether or not the respondent was classified as either 1) a Traditional or Nontraditional student, or 2) a Considered or Nontraditional student.[a]

Overall Comparison of Traditional versus Nontraditional Students.

To identify those variables which differentiate Traditional students from those who are Nontraditional, a series of discriminant analyses were computed. The data were first examined for the entire sample of Traditional and Nontraditional students and then separately for those students enrolled in Regional Occupational Programs/Centers, high schools and community colleges. This was considered desirable because of the age differences between the three sites (ROP=19.8, high school=16.2, community college=23.9, $F=45.67$, $df=2,441$, $p<.01$) and because it was felt that these age differences may modify the results of the multivariate analyses (see Bardwick and Douvan, 1972). Furthermore, separate analyses for the three sites were considered a desirable means of providing educational personnel with information pertinent to their particular student population.

The first analysis was computed forcing three demo-

[a]Because those students who had at one time considered enrolling in a nontraditional program did not clearly fit into either the Traditional or Nontraditional subgroups, a separate subgroup of Considered students was formed. The creation of this subgroup allowed for the comparison of the Nontraditional students with both the Traditionals and Considereds separately.

graphic/family background variables into the equation first, followed by the 33 independent variables of interest. The demographics forced into the analysis included ethnicity, socio-economic status, and marital status. These variables were forced in for two reasons. First, previous research has shown that socio-economic status is related to certain psychological variables (see Evanoski and Maher, 1979) and thus we wished to control the impact of this variable upon both the dependent and independent variables. Second, because we wished to provide policy makers with information which would be applicable to all students - - not only those of a particular race or social class - - these background variables were controlled in the analysis prior to the introduction of the 33 variables of interest.

As revealed in Table 16, the three demographic variables initially forced into the analysis accounted for less than two percent of the variance. After including the 33 independent variables in the analysis, a total of 16 variables entered the equation - - the three demographics forced into the equation followed by 13 independent variables with an F of 2.0 or higher. In total, approximately 41% of the variance was explained[a] between the two groups and 84% of the Traditional students and 78% of the Nontraditional students were correctly classified.

The results clearly indicate that the Traditional students differ significantly from the Nontraditional students in terms of each of the four clusters of variables, but particularly in terms of the support and encouragement they have received from important others. The Nontraditional students received more support and encouragement from female and male friends and family members, in addition to school personnel - - teachers and counselors. The Nontraditional students also had more friends who had enrolled in a course not usually taken by a woman, and they were currently employed more hours per week than the Traditional students. Finally, the students in male-dominated programs were also less traditional in their sex-role orientations than were the students in female-dominated programs, as evidenced by their higher masculinity and lower femininity scores on Bem's Sex-Role Inventory.

Next, the analyses were repeated for each of the three sites separately. The data displayed in Table 17 reveals that the independent variables included in the analyses explained a large portion of the variance between the two groups of students at each of the three

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[a] R^2=1-U statistic after entry of the final variable in the equation.

Table 16: Stepwise Discriminant Analysis for all Traditional versus Nontraditional Students

Variables in Order of Entry[b]	F to enter	U-Statistic[a] after entry	Mean Traditional N=129	Mean Nontraditional N=246
Socio-economic status (coded 1=lower, 2=middle, 3=upper)	2.45	.99	1.90	2.05
Marital status (coded 1=separated, divorced or widowed, 2=single or married	1.89	.99	1.78	1.85
Ethnicity (coded 1=white, 2=nonwhite)	1.06	.98	1.30	1.25
Encouragement from females[c]	73.86	.80	.49	1.52
Female friends' nontraditional enrollment (coded 1=yes, 2=no)	27.54	.74	1.58	1.22
Bem masculinity sum	15.26	.71	4.49	5.08
Number of hours currently worked	9.63	.69	9.22	15.94
Supportiveness from males[d]	7.84	.67	3.39	3.90
Bem femininity sum	9.63	.65	5.91	5.81
Encouragement from school personnel[e]	6.32	.64	.35	.86
			% Correctly Classified	
			83.80	77.60

[a]Only those variables which explained 1% or more of the variance are included in the table. At the end of the equation - - step 16 - - the obtained U-statistic was .59.

[b]Socio-economic status, marital status and ethnicity were forced into the equation first to control for their influence upon both the independent and dependent variables.

[c]Composed of the summation of the number of female friends and family members (i.e., girlfriend, mother and sister) who encouraged the respondent to enroll in a nontraditional course.

[d]Composed of the mean of the items describing the degree of support (from "1"=very unsupportive to "5"=very supportive) the respondent has received or perceives she would receive from both male friends and family members (i.e., boyfriend/husband, father, brother, male friends, male students) if she decided to enroll in a nontraditional class.

[e]Composed of the summation of items describing the number of school personnel (i.e., teacher, counselor) who encouraged the respondent to enroll in a nontraditional course.

sites. In total, 50% of the variance between the two groups of ROP students was explained plus 45% between the high school students, and 44% between the community college students. For the ROP students, the data produced the correct classification of 86% of both the Traditional and Nontraditional students. For the high school students, 78% of the Traditionals were correctly classified and 83% of the Nontraditionals. And, for the community college students, 90% of the two groups of students were correctly classified.

The results clearly reveal that the Traditional students differ significantly from the Nontraditional students in each of the four clusters of variables - - particularly in the support and encouragement they have received from important others. The Nontraditional students consistently received more support and encouragement from family members, friends and educational personnel. Furthermore, more of the Nontraditional students generally had female friends who had enrolled in nontraditional courses. They also had mothers who had completed more years of education, and the Nontraditionals were currently employed more hours per week than were the Traditionals.

The students in male-dominated programs also held less traditional sex-role orientations than those in female-dominated programs. They felt it was less likely that they would get married than did the Traditional students and they tended to score higher on the masculinity index of Bem's Sex-Role Inventory (BSRI) and lower on the femininity index. The Nontraditionals also scored lower on Rotter's Locus of Control index, indicating a greater internal control orientation, and lower on Zuckerman's Fear of Success scale.

Overall Comparison of Nontraditional versus Considered Students

The above analyses were then repeated for the Nontraditional students and the 117 students who had considered, but decided not to enroll in a nontraditional class (Considered). In this set of analyses a new variable was added - - the total number of doubts or concerns the student had regarding enrolling in a nontraditional program (i.e., perceived barriers). The data were again examined for the entire sample of Considered and Nontraditional students and then separately for each of the three sites (ROP, high school, and community college). As before, the discriminant analysis for all members of the two subgroups was computed by forcing the three demographic/family background variables (ethnicity, socio-economic status and marital status) into the analysis first, followed by the independent variables of interest.

Table 17: Stepwise Discriminant Analysis for Traditional versus Nontraditional Students by Site[a]

	ROP			
			Mean	
Variables in Order of Entry	F to enter	U-statistic[a] after entry	Traditional (N=36)	Nontraditional (N=103)
Female friends' nontraditional enrollment (coded 1=yes, 2=no)	49.58	.73	1.78	1.21
Number of hours currently employed	11.69	.68	9.81	16.00
Mothers' amount of education completed (coded from 1=8th grade or less to 8=graduate school)	7.79	.64	3.25	4.18
Bem femininity sum	4.18	.62	6.08	5.86
Counselor or teacher indicate R would do well in a nontraditional course (coded 0=no, 1=yes)	4.12	.60	0.19	0.64
Counselor or teacher indicate R would do poorly(coded 0=no, 1=yes)	3.77	.58	0.00	0.13
Rotter locus of control sum (coded from 0=internal to 11=external)	3.86	.57	4.01	3.59
Bem masculinity sum	2.18	.56	4.64	5.16
			% correctly classified	
			86.10	86.40

[a]Only those variables which explained 1% or more of the variance are included in the table.
[b]At the end of the equation - - step 12 - - the obtained U-statistic was .50.

Table 17: (continued)

High School

Variables in Order of Entry	F to enter	U-statistic[a] after entry	Mean Traditional (N=40)	Mean Nontraditional (N=63)
Encouragement from family members[b]	40.53	.71	.55	2.06
Supportiveness from males[c]	5.79	.67	3.27	3.85
Bem masculinity sum	3.38	.65	4.36	5.01
Bem femininity sum	7.30	.61	5.71	5.67
Encouragement from peers[d]	3.13	.59	.23	.94
			% correctly classified	
			77.50	82.50

[a]At the end of the equation - - step 11 - - the obtained U-statistic was .55.
[b]Composed of the summation of the number of family members (i.e., father, mother, brother, sister) who encouraged the respondent to enroll in a nontraditional course.
[c]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from male friends and family members (i.e., boyfriend/husband, father, brother, male friends, male students) if she decided to enroll in a nontraditional class.
[d]Composed of the summation of the number of peers (i.e., girlfriend, boyfriend/husband) who encouraged the respondent to enroll in a nontraditional course.

Table 17: (continued)

Community College

Variables in Order of Entry	F to enter	U-statistic[a] after entry	Mean Traditional (N=31)	Mean Nontraditional (N=80)
Encouragement from females[b]	34.82	.76	0.48	1.71
Encouragement from educational personnel[c]	12.51	.68	0.15	0.85
Female friends' nontraditional enrollment (coded 1=yes, 2=no)	9.51	.62	1.64	1.24
Zuckerman fear of success sum (coded from 27=low fear of success to 189=high fear of success)	6.93	.59	109.56	100.38
Supportiveness from males[d]	5.00	.56	3.48	4.08
Number of hours currently employed	5.09	.53	17.52	21.94
Intention to get married (coded 1=do not expect to, to 5=definitely expect to)	3.17	.52	3.59	3.33
Supportiveness from family[e]	2.25	.51	3.74	4.25
Number of hours mother was usually employed	2.24	.49	31.56	30.75
			% correctly classified	
			90.30	90.00

[a]At the end of the equation - - step 13 - - the obtained U-statistic was .46.
[b]Composed of the summation of the number of female friends and family members (i.e., girlfriend, mother, sister) who encouraged the respondent to enroll in a nontraditional course.
[c]Composed of the summation of the number of educational personnel (i.e., counselor, teacher) who encouraged the respondent to enroll in a nontraditional course.

Table 17: (footnotes continued)

[d]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from male friends and family members (i.e., boyfriend/husband, father, brother, male friends, male students) if she decided to enroll in a nontraditional course.

[e]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from her family (i.e., mother, father, brother, sister) if she decided to enroll in a nontraditional course.

As revealed in Table 18, the results indicate that there are numerous differences between the students who enroll in nontraditional courses and those who consider doing so but decide against it. The five groups of variables included in the analysis - - demographics/ family background, support/encouragement from important others, peer experience with nontraditional programs, personality and sex-role orientation, and perceived barriers - - explained a large portion of the variance between the two groups. And, as with the earlier Traditional versus Nontraditional analysis, the demographic variables first forced into the equation explained only a minor portion of the variance between the two subgroups (approximately one percent). However, after including all of the 34 independent variables in the analysis, a total of 20 variables entered the equation. These were the three demographics followed by 17 independent variables. In total, 28% of the variance[a] was explained between the two groups and 73% of the Considered students plus 77% of the Nontraditional students were correctly classified.

Next, the analyses were repeated for each of the three sites separately. The data displayed in Table 19 shows that 33% of the variance between the two groups of ROP students was explained; plus 46% of the variance between the high school students, and 48% between the community college students. For the ROP students, the data produced the correct classification of 82% of the students; at the high school level an average of 84% of the two groups of students were correctly classified, and 91% were classified correctly at the community college level.

Once more the data reveals sizable differences in the amount of support and encouragement the respondents received from important others. However, when these analyses are contrasted with the earlier ones for the Traditional versus Nontraditional students, the data reveals that the amount of <u>discouragement</u> received by the student is highly related to whether she decides to enroll in a nontraditional course. In the earlier analyses only one variable relating to discouragement from important others entered any of the four equations contrasting the Nontraditionals with the Traditionals.[b] However, for these analyses the amount of discouragement the respondent received seems to have played as crucial a part in

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[a] R^2=1-U statistic after entry of the final variable in the equation.

[b] In the ROP analysis the variable "counselor or teacher indicated that I would do poorly in a nontraditional course" entered the equation.

her decision to enroll in a nontraditional program as did the amount of support and encouragement she received. As would be expected, the students who actually enrolled in a nontraditional class tended to receive more support and less discouragement than those who elected not to enroll. Furthermore, when these analyses are compared with the earlier ones contrasting Traditional with Nontraditional students, it becomes apparent that the educational personnel exert a sizable amount of influence over the students' decision to enroll in a nontraditional program. In fact, support from school personnel explained the largest amount of variance between the entire Considered and Nontraditional subgroups.

The data indicate, as before, that students are more likely to enroll in a nontraditional program if they have peers or siblings who have done likewise. The students who actually enrolled in the nontraditional courses also had significantly fewer doubts and concerns regarding their actions than did the students who decided against it.

In terms of demographic differences, the Nontraditional students had completed more education and were currently working more hours per week than the students who had only considered taking a nontraditional course. The mothers of the Nontraditional students had also worked for more years and more hours per week than the mothers of the Considereds. Furthermore, the data suggest that the Nontraditional students were of a higher social class, as evidenced by the fact that their mothers' had completed more education and had been employed in higher prestige occupations.

Also, as with the previous analyses, the students who actually enrolled in a nontraditional course tended to be less traditional in their sex-role ideology. With a few exceptions, the nontraditional students had lower expectations of getting married and lower femininity scores on Bem's Sex-Role Inventory. The data tend to reveal that the Nontraditionals have a greater internal locus of control orientation than do the students who had only considered enrolling in a nontraditional course. In fact, this dimension explained the largest amount of variance between the two groups of students at the community college level.

These analyses contrasting the Nontraditional students with the Considereds also differ from the earlier analyses in terms of both the number of steps in the equation - - the earlier Traditional versus Nontraditional equations had fewer steps - - and the amount of vari-

ance explained by a single variable. Among the earlier analyses a single variable, generally an indicator of support from important others, explained between 18% and 24% of the variance between the two groups overall. However, in the equations discriminating Nontraditionals from Considereds, no one variable explained more than eight percent of the variance between the two groups. This finding may be due to the fact that the Traditional versus Nontraditional analyses were computed excluding the Considereds since it was felt that the Considereds were not a unique group, but rather had certain factors in common with both the Traditional and Nontraditional students. These analyses seem to support this assumption.

Table 18: Stepwise Discriminant Analysis for all Considered versus Nontraditional Students[a]

Variables in Order of Entry[b]	F to enter	U-statistic after entry	Mean: Considered (N=117)	Mean: Nontraditional (N=246)
Ethnicity (coded 1=white, 2=nonwhite)	1.10	.99	1.26	1.20
Socio-economic status (coded 1=lower, 2=middle, 3=upper)	0.69	.99	1.97	2.05
Marital status (coded 1=separated, divorced or widowed, 2=single or married)	0.65	.99	1.82	1.85
Supportiveness from school personnel[c]	13.00	.94	3.76	4.17
Encouragement from peers[d]	11.46	.91	0.65	1.00
Number of years mother has worked	12.03	.87	6.31	9.07
Female friends' nontraditional enrollment (coded 1=yes, 2=no)	8.07	.84	1.38	1.23
Intention to get married (coded 1=do not expect to, to 5=definitely expect to)	6.14	.83	3.69	3.24
Supportiveness from females[e]	4.51	.81	3.98	4.09
Rotter locus of control sum (coded 0=internal, to 11=external)	4.40	.80	4.06	3.48
Counselor or teacher indicate R would do well (coded 0=no, 1=yes)	4.16	.79	0.42	0.67
Discouragement from peers[f]	4.00	.78	0.32	0.16
Discouragement from educational personnel[g]	4.98	.76	0.10	0.11
			% correctly classified	
			72.60	77.40

(footnotes on next page)

Table 18: (footnotes)

[a]Only those level 2 variables which explained 1% or more of the variance are included in the table. At the end of the equation - - step 20 - - the U-statistic was .72.

[b]Socio-economic status, marital status and ethnicity were forced into the equation first to control for their influence upon both the dependent and independent variables.

[c]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from educational staff members (i.e., teacher and counselor) if she decided to enroll in a nontraditional class.

[d]Composed of the summation of the number of peers (i.e., girlfriend, boyfriend/husband) who encouraged the respondent to enter a nontraditional course.

[e]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from female friends and family members (i.e., mother, sister, female friends, female students) if she decided to enroll in a nontraditional course.

[f]Composed of the summation of the number of peers (i.e., girlfriend, boyfriend/husband) who discouraged the respondent from enrolling in a nontraditional class.

[g]Composed of the summation of the number of educational staff members (i.e., teacher, counselor) who discouraged the respondent from enrolling in a nontraditional class.

Table 19: Stepwise Discriminant Analysis for Nontraditional versus Considered Students by Site[a]

	ROP[b]			
			Mean	
Variables in Order of Entry	F to enter	U-statistic after entry	Considered (N=54)	Nontraditional (N=103)
Number of friends and siblings ever enrolled in a nontraditional course	10.33	.94	1.48	2.10
Discouragement from males[c]	7.20	.90	.50	.22
Year in school	7.88	.85	2.94	3.40
Intention to get married (coded 1=do not expect to, to 5=definitely expect to)	5.26	.82	3.76	3.09
Number of hours mother usually worked	4.49	.80	22.70	29.76
Female friends' nontraditional enrollment (coded 1=yes, 2=no)	3.24	.78	1.43	1.22
Supportiveness from educational personnel[d]	2.32	.77	3.69	4.09
Supportiveness from females[e]	3.78	.75	3.93	4.02
Mothers' degree of education (coded from 1=8th grade or less, to 8=graduate school)	2.78	.74	3.59	4.18
Discouragement from educational personnel[f]	2.36	.72	0.15	0.13
			% correctly classified	
			81.5	82.5

[a]Only those variables which explained one-percent or more of the variance are included in the table.

(see next page for remainder of footnotes)

Table 19: (ROP footnotes continued)

[b]At the end of the equation - - step 15 - - the obtained U-statistic was .67.
[c]Composed of the number of male friends and family members (i.e., boyfriend/husband, father, brother, male friends, male students) who discouraged the respondent from enrolling in a nontraditional course.
[d]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from her teacher or counselor.
[e]Composed ot the mean of items describing the degree of support the respondent has received or perceives she would receive from her female friends and family members (i.e., female-friends, mother, sister, female students).
[f]Composed of the number of teachers and counselors who discouraged the respondent from enrolling in a nontraditional course.

Table 19: (continued)

High School[a]

Variables in Order of Entry	F to enter	U-statistic after entry	Mean Considered (N=24)	Mean Nontraditional (N=61)
Encouragement from females[b]	7.28	.92	.96	1.64
Supportiveness from males[c]	4.69	.87	3.44	3.84
Total number of doubts about enrolling in a nontraditional course	2.51	.84	2.88	1.90
Prestige of mothers' occupation (coded from 1=very high prestige position [e.g., professional, technical] to 10=very low prestige [e.g., service workers])	2.28	.82	3.61	4.56
Intention to get married (coded 1= do not expect to, to 5=definitely expect to)	2.13	.80	3.00	3.30
Counselor or teacher indicate R would do poorly in a nontraditional course (coded 0=no, 1=yes)	1.28	.79	.13	.05
Discouragement from educational personnel[d]	1.86	.77	.08	.15
Encouragement from family members[e]	1.44	.75	1.46	2.10
Encouragement from educational personnel[f]	2.06	.73	.50	.93
Siblings nontraditional enrollment (coded 1=yes, 2=no)	1.85	.71	.50	.69
Discouragement from females[g]	1.76	.70	.38	.15
Parents degree of protectiveness when respondent was growing up (coded 1= not at all, to 5=a great deal)	2.40	.68	3.88	4.07

Table 19: (High School, continued)

Variables in Order of Entry	F to enter	U-statistic after entry	Mean Considered (N=24)	Mean Nontraditional
Bem femininity sum	2.01	.66	5.69	5.75
Supportiveness from females[h]	1.73	.64	3.80	3.94
Supportiveness from male and female students	3.44	.61	3.50	3.79
Supportiveness from family[i]	2.84	.59	3.74	4.03
Rotter locus of control sum (coded from 0=internal to 11=external)	1.32	.58	3.95	4.08
			% correctly classified	
			79.20	85.20

[a]At the end of the equation - - step 22 - - the obtained U-statistic was .54.
[b]Composed of the number of female friends and family members (i.e., girlfriend, mother, sister) who encouraged the respondent to enroll in a nontraditional course.
[c]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from male friends and family members (i.e., boyfriend/husband, father, brother, male friends, male students) if she decided to enroll in a nontraditional course.
[d]Composed of the number of teachers and counselors who discouraged the respondent from enrolling in a nontraditional program.
[e]Composed of the number of family members (i.e., father, mother, brother, sister) who encouraged the respondent to enroll in a nontraditional course.
[f]Composed of the number of educational personnel (i.e., counselor, teacher) who encouraged the respondent to enroll in a nontraditional course.
[g]Composed of the number of female friends and family members (i.e., girlfriends, mother, sister) who discouraged the respondent from enrolling in a nontraditional course.

Table 19: (High School footnotes, continued)

[h]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from female friends and family members (i.e., girlfriends, mother sister, female students) if she decided to enroll in a nontraditional course.

[i]Composed of the mean of the items describing the degree of support (from 1=very unsupportive to 5=very supportive) the respondent has received or perceives she would receive from her family (i.e., mother, father, brother, sister) if she decided to enroll in a nontraditional course.

Table 19: (continued)

Community College[a]

Variables in Order of Entry	F to enter	U-statistic after entry	Mean Considered (N=29)	Mean Nontraditional (N=79)
Rotter locus of control sum (coded from 0=internal to 11=external)	8.12	.93	4.65	3.25
Intention to get married (coded from 1=do not expect to, to 5=definitely expect to)	9.75	.85	3.99	3.33
Discouragement from females[b]	8.24	.79	.21	.05
Counselor or teacher indicated R would do well in a nontraditional course (coded 0=no, 1=yes)	8.88	.73	.28	.65
Bem femininity sum	5.25	.69	6.27	5.83
Encouragement from educational personnel[c]	3.77	.66	.48	.84
Discouragement from educational personnel[d]	2.35	.65	.00	.09
Counselor or teacher indicated R would do poorly in a nontraditional course (coded 0=no, 1=yes)	2.61	.63	.03	.06
Encouragement from males[e]	1.90	.62	1.31	1.72
Encouragement from family[f]	2.27	.60	1.86	2.30
			% correctly classified	
			89.7	91.1

(see footnotes next page)

Table 19: (Community College footnotes, continued)

[a]At the end of the equation - - step 20 - - the obtained U-statistic was .52.
[b]Composed of the number of female friends and family members (i.e., girlfriends, mother, sister) who discouraged the respondent from enrolling in a nontraditional course.
[c]Composed of the number of educational personnel (i.e., counselor, teacher) who encouraged the respondent to enroll in a nontraditional course.
[d]Composed of the number of teachers and counselors who discouraged the respondent from enrolling in a nontraditional program.
[e]Composed of the number of male friends and family members (i.e., boyfriend/husband, father, brother) who encouraged the respondent to enroll in a nontraditional course.
[f]Composed of the number of family members (i.e., father, mother, brother, sister) who encouraged the respondent to enroll in a nontraditional course.

V. Summary

The overall objective of this study was to identify the factors which differentiate women who enroll in traditional vocational training programs from those who enroll in nontraditional programs (i.e., those usually taken by men). The research literature suggests that an individual's career choice is affected by numerous external and internal factors. Parents, peers, teachers and counselors are external factors which have been shown to exert significant influence upon a young woman or man's career decision-making. Examples of internal factors which have been observed to influence the career choice process include fear of success, locus of control, and sex-role orientation. The tremendous influence of these factors is evidenced by the fact that children as young as five are aware of the appropriateness of certain careers for members of their sex.

The data for this study were analyzed using a two-step process. First, a series of analyses of variance and t-tests were computed to identify those variables which significantly differentiate women who pursue nontraditional careers from those who pursue traditional careers. Secondly, stepwise discriminant analysis was used for a series of integrative analyses contrasting the Nontraditional students with both the Traditionals and Considereds (i.e., individuals who considered taking a nontraditional course but decided against it). Those variables which were found in Step 1 to discriminate between either of the student subsamples at a minimum .10 level of significance were included in the more inclusive analyses at the second step.

The findings clearly revealed that differences exist between the Nontraditional students and both the Traditionals and the Considereds. In fact, significant differences were observed for each of the five clusters of variables examined.

External Variable Differences

Demographics/family background. Research suggests that women with working mothers tend to be more career-oriented than those whose mothers work as homemakers. The data from this study also indicate that the students who pursue nontraditional careers differ in both their mothers' and their own employment histories. The findings revealed that Nontraditionals were generally employed more hours per week than Traditionals and were more likely to have worked in a male-dominated occupation. In support of previous research by Tangri (1972) and Hoffman (1974), the mothers' of the Nontraditionals were found to have

been employed for more years and to have worked more hours per week than the mothers of the Considereds. Furthermore, the Nontraditional students were of a higher social class than either the Traditional or Considered students, as evidenced by the fact their mothers had completed more education and had been employed in higher prestige occupations.

Support/encouragement. Numerous studies indicate that parents, peers, and educational personnel directly affect educational and occupational preferences. However, little is known about either the amount of influence others exert upon a woman's career decision-making or who exerts the most influence. One objective of this study was to examine these questions. The amount of support Nontraditionals receive for taking a course not usually taken by a woman was compared with the amount of support Traditionals and Considereds expect they would receive. Nontraditional versus Traditional contrasts were significant ($p<.05$) for the vast majority of "important others" in the respondents' lives, including male and female family members, friends and school personnel. The comparisons of the Nontraditional students with the Considereds, however, revealed significant differences only for the men in their lives. And, as would be expected, the Nontraditionals received the most support and encouragement, followed by the Considereds, and the Traditionals received the least support. The respondents perceived the female students they knew to be the most supportive of their decision to enroll in a nontraditional course, followed by their parents. Furthermore, females in general were perceived to be more supportive of their decision than were the important males in the respondents' lives.

When the support data were further examined through stepwise discriminant analysis, it was revealed that the "important other" whose support most strongly differentiated both the Traditionals and the Considereds from the Nontraditionals, were the male students the respondents knew. The Nontraditionals believed the male students they knew were significantly more supportive of their decision to enroll in a male-dominated course than did either the Traditionals or Considereds. Female students were the next group of important others whose support ratings most significantly differentiated the student subgroups, followed by their instructors or counselors. The amount of support the students received or expected from important others explained 16% of the variance between the Traditional and Nontraditional students. The variables describing the amount of support received from important others explained a larger amount of variance between the Considered and Nontraditional students ($R^2=.25$), and the individuals whose support significantly differed between

these two groups were generally men - - men students, instructors and friends.

The Nontraditional students consistently received more support and encouragement from all the important people in their lives. They were more often told by counselors and teachers that they would do well in a Nontraditional course, and over 60% of their parents encouraged them to take a nontraditional course as compared with 46% of the Considereds' parents and 19% of the Traditionals' parents.

The data also revealed the Considereds generally received the most discouragement from the important others in their lives. In fact, both the Considereds and Traditionals received significantly more discouragement ($p<.05$) from their friends and the males in their lives than did the Nontraditionals. The important others who were perceived to be the most discouraging by all of the students were their boyfriends, with an average of 12% of the students indicating their boyfriends either had or would discourage them from entering a male-dominated program.

The data from this study, like that of others, shows that there are significant differences in the amount of support, encouragement, and discouragement received by students who choose to enroll in a male-traditional course when compared with those who enroll in a female-traditional course. The Nontraditionals consistently indicated that their families, friends, and school acquaintances were more supportive and encouraging of their decision to enroll in a male-dominated program than the Traditionals expected the "important others" in their lives would be. However, in comparing the Nontraditionals with the Considereds, the only significant differences in the amount of support or encouragement they received or expected came from the males in their lives - - male family members, friends, and school acquaintances. The data revealed the Considereds consistently expected less support and encouragement than did the Nontraditionals. The Considereds also expected significantly more discouragement from the men they knew than the Nontraditionals indicated they had actually received. In conclusion, the data disclosed that the amount of support a student expects to receive from the important others in her life is an important determinant of whether or not she chooses to enroll in a nontraditional program, explaining 25% of the variance between those who enrolled in a male-dominated program and those who only considered doing so.

Peer experience. Another objective of this research was to identify whether the existence of a role model is yet another important determinant of whether a student decides to pursue a nontraditional course of study. The

data indicated that the Nontraditionals had significantly more siblings and female friends ($p<.01$) who had taken a course not usually taken by members of their sex than the Traditionals or Considereds had. In fact, 46% of the Nontraditional students with brothers or sisters specified one or more of their siblings had taken a nontraditional course, as compared with 30% of the Considereds and only 27% of the Traditionals. Thus, clear differences existed between the student subgroups in the number of role models they knew who had taken a course not usually taken by members of their sex. Yet, the vast majority of the students had one or more friends or siblings who had taken a course not usually taken by members of their sex.

Internal Variable Differences

Perceived barriers. Since the passage of Title IX, educational programs have been prohibited from discriminating on the basis of sex. Even though this obvious barrier to a woman's enrollment in a nontraditional program has been eliminated, a number of other barriers still exist. These barriers are either institutional (e.g., counselors'/teachers' attitudes, biased course materials), situational (e.g., peer attitudes, sex discrimination in the work place) or dispositional (e.g., fear of failure, inferiority feelings). A student's perception of any one of them may impede her or his enrollment in a nontraditional program. Another objective of this study was to examine both the prevalence and impact of various barriers to a student's enrollment in a nontraditional program.

The data revealed significant differences ($p<.05$) between the Nontraditionals and the Considereds in their perceptions of certain barriers. These differences included the fact that significantly more of the students who had only considered a nontraditional course (29%), when compared with those who actually enrolled in the course (13%), believed there were certain rules or restrictions limiting enrollment to men only. Furthermore, nearly half of the students were concerned by dispositional barriers dealing with whether they had the required background and whether they would do well in the course.

These findings were particularly surprising in light of the passage of Title IX in 1972 - - eight years prior to the completion of this study and a time at which the students in this study would have been an average of 12 years old. Apparently the mandates of Title IX are not being adequately met since each school receiving federal funds is required to give notice that they do not discriminate on the basis of sex in admissions.

Personality and sex-role orientation. Over the years a large amount of research has focused upon the personality and sex-role differences between men and women. These

differences have been viewed as a means of explaining the different career paths taken by most men and women. Another objective of the present study was to determine if these same differences may also explain the nontraditional career paths taken by certain women.

The results revealed that the Traditional students had a greater fear of success than the Nontraditionals ($p<.01$). Also, the Nontraditionals in ROP programs scored more internal on Rotter's locus of control measure than did the Traditionals and at the high school and community college levels they scored more internal than did the Considereds. Significant differences among the students in terms of their sex-role orientations were also observed. The Nontraditionals scored significanly higher on the masculinity scale ($p<.01$) and lower on the femininity scale ($p<.05$) of Bem's Sex-Role Inventory than did either of the other student subgroups. The Traditionals and Considereds also had a greater intention of assuming a traditional role in the home since they had greater expectations of getting married than did the Nontraditionals.

The initial analyses again clearly revealed the existance of significant differences between those students who pursue a traditional role and those who pursue a nontraditional one. The findings supported the prior research which suggests that an individual's career choice is largely influenced by his/her sex-role orientation, achievement motivation, and the manner in which s/he accounts for success and failure.

Integrative Analyses

The primary goal of this study was to identify those particular variables which clearly differentiate students who undertake a nontraditional course of study from those who continue to follow the female-traditional career path. As a means of doing this, two sets of stepwise discriminant analyses were computed, one for the Traditional versus Nontraditional students and another for the Considereds versus Nontraditionals. Two separate analyses were conducted because it was felt that the Considereds did not fit into either the Traditional or Nontraditional subgroups, but rather had certain factors in common with both groups of students.

The data were analyzed first for the entire group of Nontraditionals versus Traditionals and Nontraditionals versus Considereds, and then secondly for each of the three sites (ROP, high school, community college) separately. The overall analysis was conducted by forcing three demographic/family background variables (ethnicity, socioeconomic status, and marital status) into the equation first before allowing for the entry of the independent

variables identified as important in the analyses of variance and t-tests described previously. The data were analyzed in this fashion to control for the impact of certain variables upon both the dependent and independent variables; thus, providing information which could be utilized with all students, not only those of a particular race or social class. The second set of analyses, which were site specific, were designed to provide information of value to those instructors, counselors, and policy makers who are concerned with obtaining information particular to the level of their students.

Nontraditionals versus Traditionals. The first discriminant analysis in which the three demographic variables were forced into the equation revealed that less than two percent of the variance was accounted for by these variables. However, once the remaining independent variables were allowed to enter the equation, 41% of the variance between the two groups was explained, with 84% of the Traditionals and 78% of the Nontraditionals being correctly classified. When the data were examined for each of the three sites separately the explanatory power of the variables was even better, resulting in the correct classification of approximately 85% of the students.

The variables which explained the largest portion of the variance between the two groups were external variables. The one cluster of variables on which the two student groups differed most dealt with the amount of support and encouragement they received from the important others in their lives, particularly their families and the females they knew. The Nontraditionals consistently received more support than did the Traditionals; in fact, the variable describing the amount of encouragement they received from either females or family members alone explained 18% of the variance between the student subgroups, whereas at the community college level encouragement from females explained 24% of the variance. For the ROP students, the first variable which entered the equation, explaining 27% of the variance, was whether they had any female friends who had enrolled in a course not usually taken by a woman. Although this peer experience variable is not a direct indicator of support, it probably indicates the acceptability of a nontraditional career choice. In general, it appeared that the explanatory power of the support variables was quite noteworthy.

The second set of variables which differentiated the Traditionals from the Nontraditionals was their personality and sex-role orientations - - internal factors. The women enrolled in male-dominated programs were significantly less traditional in their sex-role orientations, as indicated by their tendency to score higher on the

masculinity subscale of the Bem Sex-Role Inventory and lower on the femininity subscale. The Nontraditionals also indicated it was less likely that they would get married than did the Traditional students. The Traditionals, on the other hand, were more external in their control orientations and had more fear of success than did the Nontraditional students.

The final cluster of variables which also differentiated the two groups were demographics. Only the number of hours the student worked proved to be important from this cluster; the data revealing the Nontraditionals worked more hours per week than did the Traditionals.

Nontraditionals versus Considereds. The above analyses were repeated for the Nontraditionals versus Considereds. And, as with the previous analyses, the three demographics forced into the equation explained only a small portion of the variance. But, once the entire set of variables entered the analysis, a sizable portion of the variance was explained. For the entire group of Nontraditional and Considered students, 28% of the variance was explained and 75% of the students were properly classified. When the analyses were repeated for the three sites, the findings were even more impressive. Between 33% and 48% of the variance between the two groups was explained and an average of 86% of the students were properly classified.

Once more, the amount of support and encouragement they received seemed to largely distinguish between the two student groups. However, with these subgroups the amount of discouragement they received also was highly related to whether or not they decided to enroll in a nontraditional course. As would be expected, the students who actually enrolled in the nontraditional classes consistently received more support and encouragement, plus less discouragement. And, the one factor which explained the most variance between the Considereds and Nontraditionals overall was the amount of support and encouragement they received from their teachers and counselors.

The data also indicated, as before, that the students who actually enrolled in a nontraditional course tended to be less traditional in their sex-role ideology and more internal in their control orientations than did the students who had only considered enrolling in a nontraditional course. The Nontraditionals also perceived fewer barriers to pursuing a nontraditional course of study.

Once more, the students were distinguishable on the basis of both their own and their mothers' work histories.

The Nontraditional students and their mothers had generally worked more hours per week and their mothers had worked for more years than had the mothers of the Considereds. Furthermore, the Nontraditional students were of a higher social class, as evidenced by the fact their mothers had completed more education and had worked in higher prestige occupations.

However, these analyses differ from those contrasting the Traditionals with the Nontraditionals in both the number of variables entering the equation and the amount of variance explained by a single variable. These equations included more variables than the Traditional versus Nontraditional analyses and no one variable explained more than eight percent of the variance between the two student groups. This finding is probably due to the fact that the earlier analyses were calculated excluding the Considereds, a student subgroup which apparently is not unique, but rather has certain factors in common with both the Traditional and Nontraditional students.

VI. Overview and Policy Recommendations

The numbers of women in the labor force are steadily rising. These numbers are largely a reflection of the fact that women work out of necessity to help support their families, and a large number of these women are solely responsible for the support of their families. Yet, even though the recent increases in the rate of inflation and numbers of female-headed households necessitate that women seek gainful employment, women continue to seek employment in typically low-paying occupations and they continue to earn 59¢ for every dollar earned by a man. In 1950, 62% of all U.S. clerical workers were women; however, in 1978, the figure had risen to 79% (Vetter et al, 1979).

This serious problem of occupational sex segregation begins with the type of job preparation and training women receive in the school. As a result, federal legislation was passed in 1976 mandating each state to:

> "...develop and carry out programs of vocational education...so as to overcome sex discrimination and sex stereotyping in vocational education programs...and thereby furnish equal education opportunities in vocational education." (P.L.#94-482, Title II)

Title II of the Education Amendments of 1976 set forth policies and procedures to assure equal access to vocational education programs for both men and women. Whereas Title IX prohibited educational institutions from discriminating on the basis of sex, Title II required them to take steps to actively encourage students to undertake vocational training not usually taken by members of their sex.

Methodology

A stratified purposive sample of women enrolled in California vocational training programs was selected for the study. The respondents were enrolled in one of nine sites - - three secondary, three Regional Occupational Centers/Programs and three community colleges. The sites were further stratified on the basis of socio-economic status, representing either lower, middle or upper income areas, from which an equal number of schools were selected. At each site, approximately 20-40 women enrolled in male-traditional programs (Nontraditionals, and another 20-40 enrolled in female-traditional programs (Traditionals) participated in the study. A total of 470 women completed the self-administered questionnaire - - 246 Nontraditionals and 224 Traditionals. Among the Traditionals were 117 stu-

dents who had previously considered taking a nontraditional class but had decided against it (Considereds). The respondents were an average of 20 years old and the sample was 73% white, 4% Black, 12% Hispanic, 2% Asian and 10% other.

The questionnaire required approximately 45 minutes to complete. It included items from five primary clusters of variables assessing the external and internal factors which often impact upon a student's career decision-making. The item clusters were: 1) demographics/family background; 2) support/encouragement from important others; 3) peer experience with nontraditional programs; 4) personality and sex-role orientation; and 5) perceived barriers to enrolling in a nontraditional program.

Results

The purpose of this study was to identify those factors in a woman's background which influence her career choice. The data reveals that some of these factors are internal (e.g., sex-role attitudes, fear of success) whereas others are external (e.g., support from important others, presence of a role model) to the women. Furthermore, the factors tend to interplay in complex ways to affect a woman's career decision-making.

The data reveal significant differences between the Traditional and Nontraditional students in terms of: 1) demographic/family background; 2) amount of support from important others; 3) presence of role models; 4) personality and sex-role orientation, and 5) perceived barriers to enrollment in a nontraditional program. Some of these findings are highlighted below. However, it should be noted that even though significant differences were observed between those who chose male-dominated programs and those in female-dominated programs, these findings reveal only the association between enrolling in a nontraditional program and each of the above dimensions. What the true cause and effect relationship is cannot be determined. However, speculation as to the causes of these associations will be made so that policy recommendations can be formulated.

Support from important others. The most significant differences between the students who undertake nontraditional training and those who do otherwise is in terms of the amount of support, encouragement and discouragement they receive from the important others in their lives. In fact, approximately 20% of the variance between the students choices of vocational training (either Traditional or Nontraditional) can be explained solely by the amount of encouragment they received from their families and friends to enter a nontraditional program.

Assumption 1: The important others in a woman's life are the major influences which shape her career aspirations.

The Nontraditional students in the study consistently received the most support and encouragement to enter nontraditional fields, followed by those who had at one time considered such a program, but decided against it (Considereds), and lastly by those students who had never given thought to enrolling in a nontraditional program (Traditionals). However, those who had considered taking a nontraditional course, but did not, were most often discouraged from pursuing their aspirations.

Assumption 2: The amount of support and encouragement a student receives from the important others in her life is not the sole determinant of whether or not she will enroll in a nontraditional program. Rather, the amount of discouragement the student receives may be just as important, if not more so.

The individuals who most often encouraged the students to enroll in nontraditional programs were their mothers and fathers with over 60% of the Nontraditionals indicating their parents had encouraged them, compared with 45% of the Considereds and 19% of the Traditionals. Those who most often discouraged them were their boyfriends; however, only 12% of the respondents had been discouraged by their boyfriends. Teachers and counselors, on the other hand, were found to have encouraged approximately 45% of the Nontraditionals, 28% of the Considereds and 15% of the Traditionals to begin vocational training in a male-dominated field.

The individuals who were perceived or expected to be the most supportive of the students' decision to enroll in a male-dominated program were the female students already enrolled in the nontraditional classes. The individuals who were believed to be the least supportive were the male students in the classes. In fact, the "important other" whose amount of support most strongly differentiated the Nontraditionals from both the Traditionals and Considereds were the male students, followed by the female students in the classes. Once more, the Nontraditionals perceived significantly more support than did either the Traditionals or Considereds. Furthermore, the individuals whose support significantly differentiated the Nontraditionals from the Considereds were, for the most part, males - - male students, friends, boyfriends and counselors.

Assumption 3: The amount of support, encouragement, and discouragement a student receives from the men she knows will greatly impact upon her choice of a career. This influence is crucial in determining whether or not a woman will follow through on her intention to enter a male-dominated program.

Peer experience with a nontraditional program. A large number of the respondents had friends and siblings who had completed courses not usually taken by members of their sex. Once more the Nontraditionals had considerably more female friends and siblings who had completed nontraditional courses. This variable was also important in differentiating students who follow a traditional career path from those who pursue a nontraditional path.

Assumption 4: The more nontraditional role models a student has, the more likely it is that she will enroll in a male-dominated program.

Personality and sex-role orientation. The women enrolled in traditional vocational training programs (e.g., business, health, home economics) had a significantly greater fear of success than did those in nontraditional programs. The Traditionals also believed they had less control over their lives than did the Nontraditionals. Furthermore, the Traditionals were significantly more feminine, less masculine and as a result, more sex-typed than were the students who engaged in nontraditional vocational training.

Perceived Barriers to Enrolling in a Nontraditional Program. Both the students who entered nontraditional programs and those who chose not to saw a number of barriers to their enrollment. In fact, nearly 50% of the students were concerned that they did not have the necessary background and would not do well in a course usually taken by men. However, the only potential barrier which significantly differentiated those students who decided to enroll in a nontraditional program from those who decided otherwise, was the presence of rules or regulations which restricted the enrollment in the course to men only. In fact, 29% of the Considereds and even 13% of the Nontraditionals believed there were rules restricting the classes to men only - - in direct violation of Title IX. This finding was particularly surprising in light of the fact Title IX was passed in 1972, a time at which the students in this study were an average of 12 years old.

Assumption 5: The actual or falsely perceived presence of rules which restrict enrollment in a particular course to members of one sex inhibits the enrollment of some women who have considered taking male-dominated programs.

Demographics/family background. Once more, there were significant differences between the students in traditional programs and those in nontraditional programs. On the average, the parents of the Nontraditional students had completed more education and both the Nontraditional students and their mothers were employed more hours per week than were the Traditional students or their mothers. The mothers of the Nontraditionals were also employed in more prestigious occupations, which, when coupled with their own and their spouse's higher education, suggests the Nontraditionals were from a slightly higher social class than were the Traditional students.

Recommendations

The findings of this study identified differences among the Traditional, Considered, and Nontraditional students which are not subject to influence or modification (e.g., family background and sex-role orientation) and others which are (e.g., perceived barriers to nontraditional enrollment and support from important others). For the purpose of improving educational quality and fostering equality of educational opportunity, the attention of both policy makers and educational staff members should be focused upon those variables in the environment which are subject to influence and change. A few activities are recommended below to facilitate more nontraditional enrollments.

1. Develop a recruitment campaign for all the important others in a student's life. The data identify the tremendous impact of family members, friends, students and educational staff members upon a woman's process of career decision-making. Attention should therefore be focused upon informing these individuals of both the value and opportunities of a nontraditional career. The individuals should be made aware that the majority of today's women will hold jobs outside the home, and that many of these women will be the sole support of their families. As a result, these women need to earn respectable wages, and a nontraditional career offers them that opportunity. The influence of these individuals upon a student's career aspirations should also be stressed. And, attention should be focused upon the men in the students' lives, since they exert significant influence upon the women's choice of a career.

2. Provide in-service training for educational staff members. Title II requires that educational personnel take active steps to foster nontraditional enrollments. However, the data suggest teachers and counselors may not be actively encouraging women to take nontraditional programs. Approximately, 45% of the students who chose to enter a nontraditional program indicated they had been encouraged by their teachers and/or counselors to undertake the training. Whereas

approximately 29% of the Considereds indicated they had been encouraged, and 16% of the Traditionals had been encouraged by the educational staff. Even though it is not possible to determine whether the Nontraditional and Considered students received encouragement from the educational staff members before or after they had indicated an interest in a nontraditional program, the data do indicate that the vast majority of the students were never informed of the value and opportunity of a nontraditional career. Counselors and teachers have a responsibility to broaden the aspirations and opportunities available to their students. Title II requires that they do so.

In addition to informing the educational staff members of the mandates of Title II, the in-service training should focus on the actual development of student recruitment strategies and materials so active steps can be taken to recruit students into nontraditional programs. Furthermore, the amount of influence which male and female students in the nontraditional classes have upon a woman's decision to enter a nontraditional program should also be stressed. Since the male students in the class are viewed as the least supportive of a woman's decision to enter a nontraditional field, and since they have the most influence upon her decision, the teacher should focus particular attention upon the male students in the class. S/he should attempt to enlighten the students as to the need for equal educational and occupational opportunities for both men and women and, hopefully, engage them in the actual recruitment of women into the classes.

3. Advertise the availability of all courses to all students. Title IX requies that all schools receiving federal funds give notice that they do not discriminate on the basis of sex. However, a sizable number of the students at the schools surveyed, all of which receive federal funds, indicated that they perceived the existence of certain rules or regulations which restricted enrollment in the course to males only. Thirteen percent of those who eventually enrolled in a male-dominated program thought women were not allowed in the course, and 29% of those who at one time considered taking it, but never did, also thought it was for men only.

School personnel should take affirmative steps to change these perceptions which obviously inhibit the enrollment of women in nontraditional programs. Such steps might include a widely advertised recruitment program and counseling efforts which encourage students to enroll in vocational education courses based on their interests not on their sex. Nevertheless, Title IX requires that all students be notified that there is no discrimination in admission to any course on the basis of sex. It is therefore necessary that all students be informed of the availability of all courses to all students.

4. Provide support services for nontraditional students. A large number of both the students who enrolled in nontraditional programs (44%) and those who only considered doing so (51%) were concerned that they did not have the necessary background and would not do well in male-dominated programs. This is yet another barrier to a student's pursuit of a nontraditional career. Steps should be taken to mitigate these barriers through curriculum planning which will ensure that students have an adequate background in their areas of nontraditional interest. This support should not be limited to curriculum only, but should also include emotional and personal support which is crucial to a student's pursuit of a nontraditional career.

This study identified the particular factors which differentiate women who enroll in male-dominated programs from those who continue within a female-traditional course of study. Certain of these factors are subject to influence and so certain policy recommendations were made. Given that over 50% of the women enrolled in female-traditional vocational programs in this study had considered taking a male-traditional course, but for one reason or another did not, a sizable increase in the number of nontraditional students appears feasible. Hopefully, some of the above recommendations should help facilitate educational and occupational equity for all students.

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APPENDIX I: Questionnaire

Student Career Choice Study

Directions: Your school is cooperating in a state-wide study of student attitudes, experiences, and career plans. You have been selected as a representative of all other California students who are in vocational training programs. Your answers are very important to us.

Please read through the questionnaire carefully and answer the questions truthfully. If you have any questions, please feel free to ask the Steiger, Fink and Kosecoff staff member who provided you with your questionnaire.

There are no right or wrong answers to the questions and this is not a test of any sort for your school. Your answers will be strictly confidential and will not be revealed to anyone outside the research staff.

Remember, if you have any questions, please ask them.

---

1. What year in school are you?

   ____ High School Freshman
   ____ High School Sophmore
   ____ High School Junior
   ____ High School Senior
   ____ College Freshman
   ____ College Sophmore

2. Have you ever been employed other than as a babysitter?

   ____Yes
   ____No

If you answered "Yes" to Question 2, please answer Question 3.

If you answered "No" to Question 2, please skip to question 6.

3. Are you currently employed?

   ____Yes
   ____No

4. On the average, how many hours a week do you (or did you) work during the school year?

   _____

5. What kind of work do you (or did you) usually do? (For example, pump gas, type, file, construction work, stock groceries, sell clothing, etc.)

   _____

Next, we'd like to ask you a few questions about your family.

6. How many brothers do you have?

   ____Older brothers
   ____Younger brothers

7. How many sisters do you have?

   ____Older sisters
   ____Younger sisters

8. When you were growing up, how much did you parents tend to: (using the following scale please put a number from 1 to 5 in the blank below for each of the statements).

1	2	3	4	5
Not at all		Somewhat		A great deal

   ___a. Be very protective of you and worried about you.
   ___b. Want you to be independent and rely on yourself.
   ___c. Want you to be the best at everything.

9. Do you live with: (Check only one)

___Both parents
___Your mother
___Your father
___No one
___Another family member(s)
___A female roommate(s)
___A male roommate(s)
___Both female and male roommates
___Your husband
___Someone other than the above
___Your children

10. Are both of your parents living?

___Yes
___No
___Don't know

If you answered "Yes" to Question 10, please answer Question 11.

If you answered "No" or "Don't know" to Question 10, please skip to Question 12.

11. Are your parents currently: (Check only one)

___Married to each other
___One or both remarried to others
___Both separated
___Both divorced

12. What is the highest level of education completed by your father and your mother? (Check one answer for your father and one answer for your mother.)

FATHER	MOTHER	
___	___	8th grade or less
___	___	Some high school
___	___	High school grad
___	___	Tech/Business school
___	___	Some college
___	___	2-year college grad
___	___	4-year college grad
___	___	Graduate School
___	___	Don't know

13. Has your mother ever been employed since you were born?

___Yes
___No
___Don't know

If you answered "Yes" to Question 13, please answer Question 14.

If you answered "No" or "Don't know" to Ques. 13, please skip to Ques. 19

14. Is your mother currently employed?

___Yes
___No

15. How old were you when she first started working?

_____

16. How many years has your mother been employed either full-time or part-time since you were born?

_____

17. How many hours a week does (or did) your mother usually work? (A full-time job is generally 40 hours a week).

_____

18. What type of work does (or did) your mother usually do? (For example, pump gas, type, file, construction work, stock groceries, sell clothing, sell insurance, administer projects, manage an office, bookkeeping, etc.)

_____

18a. Is her job the type that is usually done by (check one):

___A man
___A woman
___Either a man or a woman

Now, we'd like to find out about the courses you have taken during high school and/or college.

19. Are you currently taking or have you ever taken any of the following kinds of classes. (Please check either "Yes" or "No" for each program area.)

YES	NO	
___	___	Business, office or commercial courses such as bookkeeping, typing
___	___	Distributive education courses such as marketing, accounting, wholesaling
___	___	Health courses such as medical-dental technician, nurse's aide
___	___	Home economics courses such as food service, decorating, child care
___	___	Trade and industrial courses such as auto mechanics, welding, carpentry
___	___	Technical courses such as electronics, industrial chemistry
___	___	Agricultural courses such as horticulture, crop production.

20. What is your major course of study in school? (Check one)

1. Vocational
   - ___a. Business
   - ___b. Distributive
   - ___c. Health
   - ___d. Home economics
   - ___e. Trade and industrial
   - ___f. Technical
   - ___g. Agriculture
2. ___ General
3. ___ College preparatory

Many students are now considering taking classes which are not usually taken by members of their sex. For example, a man may take a typing class or a woman may take an auto repair class.

21. Have you ever considered taking a class which is not usually taken by a woman?

___Yes
___No

If you answered "Yes" to Question 21, please answer Question 22.

If you answered "No" to Question 21, please skip to Question 31.

22. What were the names of the classes not usually taken by a woman which you considered enrolling in?

_____

_____

22a. How many classes did you consider enrolling in?

_____

23. Did you actually enroll in any of these classes?

___Yes
___No

If you answered "Yes" to Question 23, please answer Question 24.

If you answered "No" to Question 23, please skip to Question 30.

24. What were the names of the classes not usually taken by a woman which you enrolled in?

_____

_____

24a. How many of these classes did you enroll in?

_____

24b. How old were you when you first enrolled in a class not usually taken by a woman?

_____

25. Did you complete any of the classes which you enrolled in?

____Yes
____No
____No. I'm still taking them

26. What is your grade average in the classes which you completed? (C , B-, A-)

_____

____Don't know, I haven't completed the classes yet.

27. How well have you usually been accepted by the male students in these classes? (Check one answer)

____Very well
____Pretty well
____O.K.
____Poorly
____Very poorly

28. How well have you usually been accepted by the female students in these classes?

____Very well
____Pretty well
____O.K.
____Poorly
____Very poorly
____There were no female students

29. How well have you usually been accepted by the instructors in these classes? (Check one answer)

____Very well
____Pretty well
____O.K.
____Poorly
____Very Poorly

Some people have doubts which keep them from enrolling in certain classes, other people enroll in these classes even though they have doubts.

30. What were some of the doubts, or concerns you had about being in a class not usually taken by a woman? (Please check either "Yes" or "No" for each statement below.)

YES	NO	
—	—	Rules restricted the class enrollment to men only.
—	—	My friends thought that I shouldn't take the class.
—	—	I thought that people would think I was strange.
—	—	The teacher didn't want me to take it.
—	—	The counselor didn't want me to take it.
—	—	I was worried that I didn't have the necessary background to take it.
—	—	I was concerned that I wouldn't do well in it.
—	—	The students in the class didn't want me to take it.
—	—	The class materials seemed biased against women.
—	—	I thought that I'd have trouble finding a job after completing the program because few women are employed in the type of work I wanted to study.

31. Have any of the following people ever encouraged you to take or discouraged you from taking a class which is not usually taken by a woman? (Please check an answer for each person below.)

Encouraged	Discouraged	Doesn't apply	
____	____	____	Mother
____	____	____	Father
____	____	____	Brother
____	____	____	Sister

What about these people? Did they encourage or discourage you?

Encouraged	Discouraged	Doesn't apply	
____	____	____	Girlfriend
____	____	____	Boyfriend
____	____	____	Husband
____	____	____	Teacher
____	____	____	Counselor
____	____	____	Employer

32. How supportive do you think the following people are or would be of your decision to enroll in a class not usually taken by a woman? (Please use the following scale and assign a number from "1" to "5" or a "D" for each person below.)

1	2	3	4	5	D
Very Unsupportive		Neutral		Very supportive	Does not apply

____Mother
____Father
____Brother
____Sister
____Boyfriend/Husband
____Female friends
____Male friends
____Female students in the class
____Male students in the class
____Instructor of the class
____My counselor

33. Did your counselor or any of your teachers ever give you the impression that you would do well in a vocational class not usually taken by a woman?

____Yes, my counselor did
____Yes, my teacher did
____Yes, they both did
____No one did

34. Did your counselor or any of your teachers ever give you the impression that you would do poorly in a vocational class not usually taken by a woman?

____Yes, my counselor did
____Yes, my teacher did
____Yes, they both did
____No one did

35. Have any of your female friends ever taken any courses which are not usually taken by a woman?

____Yes
____No

36. Have any of your male friends ever taken any courses which are not usually taken by a man?

____Yes
____No

37. Have any of your brothers or sisters ever taken any courses which are not usually taken by members of their sex?

____Yes, my brother(s) did
____Yes, my sister(s) did
____Yes, they both did
____No one did
____Have no brothers or sisters

38. When you finish going to school/ college, what do you expect to do? (Please use the following scale and assign a number from "1" to "5" for each statement below.)

1	2	3	4	5
Do not expect to		Somewhat expect to		Definitely expect to

___Get married
___Raise a family
___Work part-time
___Work full-time
___Work at a job usually done by a man
___Work at a job usually done by a woman
___Work while I raise a family
___Work at a job done by either a man or a woman

39. Using the scale below, please circle a number which indicates how career-oriented or homemaker-oriented you consider yourself to be.

1	2	3	4	5
More career-oriented than homemaker-oriented		Equal		More homemaker-oriented than career-oriented

40. What is your age?

_____

There are lots of different types of Americans-people of different races and people whose families have come from many nations.

41. Which group best describes your ethnic or racial background? (Check only one)

___White/Anglo
___Black/Negro
___Mexican/Mexican-American
___Latin American
___Asian-American
___Other Oriental
___American Indian
___Other

42. What is your current marital status? (Check only one)

___Single-do not have a steady male friend
___Single-do have a steady male friend
___Married
___Separated
___Divorced
___Widowed

43. In your estimation, which of the following is closest to your household's total income? (Check one)

___Less than $10,000
___$10,001 to $15,000
___$15,001 to $20,000
___$20,001 to $25,000
___$25,001 to $30,000
___$30,001 and over
___Don't know

We may be conducting another study in one year to identify the experiences and problems students encounter in looking for employment. We would very much like to talk with you when we start this study. To help us locate you we would like to request the following information:

Your name _____

Your current telephone number (___) _____
Area code and number

The names and phone numbers of at least two people who will always know where you are living:

1. _____ Is this person a friend or a relative? (Circle one)
(Name)

(___) _____
(Phone number)

2. _____ Is this person a friend or a relative? (Circle one)
(Name)

(___) _____
(Phone number)

3. _____ Is this person a friend or a relative? (Circle one)
(Name)

(___) _____
(Phone number)

Rotter Scale

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Indicate for each item the alternative you select, a or b, in the space for that item. Please answer all items carefully but do not spend too much time on any one item. In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you most strongly believe to be the case as far as you're concerned. Also, try to respond to each item independently when making your choice; do not be influenced by your previous choice.

_____ 1. a. Many of the unhappy things in people's lives are partly due to bad luck.
b. People's misfortunes result from the mistakes they make.

_____ 2. a. In the long run, people get the respect they deserve in this world.
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

_____ 3. a. Without the right breaks, one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.

_____ 4. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.

_____ 5. a. When I make plans I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead, because many things turn out to be a matter of good or bad fortune anyway.

_____ 6. a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might just as well decide what to do by flipping a coin.

_____ 7. a. Who gets to be boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends on ability; luck has little or nothing to do with it.

_____ 8. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
b. There is no such thing as "luck."

_____ 9. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

_____10. a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.

_____11. a. What happens to me is my own doing.
b. Sometimes I feel that I don't have enough control over the direction my life is taking.

Zuckerman Scale

Instructions: In this questionnaire you will find a number of statements. For each statement a scale from 1 to 7 is provided, with 1 representing one extreme and 7 the other extreme. In each case, circle a number from 1 to 7 to indicate whether or not you agree with the statement. This is a measure of personal attitudes. There are no right or wrong answers. Please answer all items.

		Totally agree			Uncertain			Totally disagree
1.	I expect other people to fully appreciate my potential.	1	2	3	4	5	6	7
2.	Often the cost of success is greater than the reward.	1	2	3	4	5	6	7
3.	For every winner there are several rejected and unhappy losers.	1	2	3	4	5	6	7
4.	The only way I can prove my worth is by winning a game or doing well on a task.	1	2	3	4	5	6	7
5.	I enjoy telling my friends that I have done something especially well.	1	2	3	4	5	6	7
6.	It is more important to play the game than to win it.	1	2	3	4	5	6	7
7.	In my attempt to do better than others, I realize I may lose many of my friends.	1	2	3	4	5	6	7
8.	In competition I try to win no matter what.	1	2	3	4	5	6	7
9.	A person who is at the top faces nothing but a constant struggle to stay there.	1	2	3	4	5	6	7
10.	I am happy only when I am doing better than others.	1	2	3	4	5	6	7
11.	I think "success" has been emphasized too much in our culture.	1	2	3	4	5	6	7
12.	In order to achieve one must give up the fun things in life.	1	2	3	4	5	6	7
13.	The cost of success is overwhelming responsibility.	1	2	3	4	5	6	7

Zuckerman Scale
(continued)

		Totally agree			Uncertain			Totally disagree
14.	Achievement commands respect.	1	2	3	4	5	6	7
15.	I become embarrassed when others compliment me on my work.	1	2	3	4	5	6	7
16.	A successful person is often considered by others to be both aloof and snobbish.	1	2	3	4	5	6	7
17.	When you're on top, everyone looks up to you.	1	2	3	4	5	6	7
18.	People's behavior change for the worst after they become successful.	1	2	3	4	5	6	7
19.	When competing against another person, I sometimes feel better if I lose than if I win.	1	2	3	4	5	6	7
20.	Once you're on top, everyone is your buddy and no one is your friend.	1	2	3	4	5	6	7
21.	When you're the best, all doors are open.	1	2	3	4	5	6	7
22.	Even when I do well on a task, I sometimes feel like a phony or a fraud.	1	2	3	4	5	6	7
23.	I believe that successful people are often sad and lonely.	1	2	3	4	5	6	7
24.	The rewards of a successful competition are greater than those received from cooperation.	1	2	3	4	5	6	7
25.	When I am on top the responsibility makes me feel uneasy.	1	2	3	4	5	6	7
26.	It is extremely important for me to do well in all things that I undertake.	1	2	3	4	5	6	7
27.	I believe I will be more successful than most of the people I know.	1	2	3	4	5	6	7

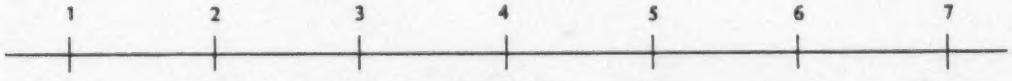
BEM INVENTORY

DIRECTIONS

We would like you to use characteristics to describe yourself, that is, we would like you to indicate, on a scale from 1 to 7, how true of you each of these characteristics is. Please do not leave any characteristic unmarked.

Example: sly

Write a 1 if it is never or almost never true that you are sly.
Write a 2 if it is usually not true that you are sly.
Write a 3 if it is sometimes but infrequently true that you are sly.
Write a 4 if it is occasionally true that you are sly.
Write a 5 if it is often true that you are sly.
Write a 6 if it is usually true that you are sly.
Write a 7 if it is always or almost always true that you are sly.



1	2	3	4	5	6	7
Never or almost never true	Usually not true	Sometimes but infrequently true	Occasionally true	Often true	Usually true	Always or almost always true

Characteristic	Definition	Rating
Defend my own beliefs	stand up for what you believe in	
Affectionate	tender, loving	
Conscientious	careful, thorough	
Independent	relying on yourself	
Sympathetic	able to understand how other people feel	
Moody	having feelings that often change	
Assertive	act in a confident or forceful way	
Sensitive to needs of others	able to understand what others want	
Reliable	able to be counted on	
Strong personality	forceful, definite individual	
Understanding	Able to grasp how other people feel	
Jealous	suspicious of a rival or envious of what someone else has	
Forceful	powerful	
Compassionate	caring	
Truthful	honest	

1	2	3	4	5	6	7
Never or almost never true	Usually not true	Sometimes but infrequently true	Occasionally true	Often true	Usually true	Always or almost always true

Characteristic	Definition	Rating
Have leadership abilities	able to guide others or show the way	_____
Eager to soothe hurt feelings	wanting to make others feel better	_____
Secretive	hiding one's thoughts or feelings	_____
Willing to take risks	not afraid to take chances	_____
Warm	loving	_____
Adaptable	flexible, able to adjust to change	_____
Dominant	exercising authority or control over others	_____
Tender	gentle, loving	_____
Conceited	having too high an opinion of yourself, vain	_____
Willing to take a stand	not afraid to defend your opinion	_____
Love children	like kids	_____
Tactful	know how to say the right thing without hurting	_____
Aggressive	willing to fight for what you want	_____
Gentle	kind	_____
Conventional	following the rules or the accepted way of doing things	_____

Beckman Employment Scale

Instructions: Now, we would like to find out what you personally see as the good things or advantages of being employed. Here is a list of statements that people sometimes make. Please rate these statements using the scale below according to how important each statement is for you. If you disagree with any statement, indicate this by assigning a "D" to the statement. A "1" indicates that the statement is not an important reason for you to work; whereas a "7" indicates that the statement is a very important reason for you to work. Remember to assign a number from 1 to 7 or a "D" to each statement.

Rating scale:	1	2	3	4	5	6	7	D
	0 no importance		Somewhat important			Extremely Important		Disagree

1. I could spend my money the way I want. _____
2. I would contribute to society. _____
3. My working would have a good effect on my children. _____
4. Working would give me a sense of fulfillment. _____
5. I would like to put my knowledge to use. _____
6. I would be able to use my mind. _____
7. My children would benefit from the things I could buy them. _____
8. Working would have a good effect on my marriage. _____
9. I could earn money. _____
10. Working would make me feel better about myself. _____
11. I would like to interact with people at work. _____
12. I would like the challenge of having a job. _____
13. Working would get me out of the house and into the world. _____
14. I would enjoy the work that I would do. _____
15. Working would help me grow and develop as a person. _____

Next we also would like to find out what you personally see as the bad things or disadvantages of being employed. Here is a list of statements that people sometimes make. Please rate these statements using the same scale as above indicating how important each statement is for you. If you disagree with any statement, indicate this by assigning a "D" to the statement.

1. There would be less time to do the other things that I'd like to do. _____

2. Working and doing everything else I have to do would be tiring. _____

3. I would feel guilty about leaving my children when I go to work. _____

4. Working would create pressure and stress in my life. _____

5. Working would create problems and strains between me and my husband. _____

6. I would dislike having to get up in the morning to go to work. _____

7. There would be less time for household tasks. _____

8. I would not get to be with my children as much as I would like. _____

9. My working would not have a good effect on my children. _____

10. Working would limit my freedom. _____

11. I would have to spend money to buy things for work like clothes and gasoline. _____

12. I would dislike some aspects of the type of work I would have to do. _____